IN THE

Supreme Court of the United States

OCTOBER TERM, 1978

No. 78- 676

THE HICKOK ELECTRICAL INSTRUMENT COMPANY,
Petitioner,

v.

TEKTRONIX, INC., THE UNITED STATES, JETRONIC INDUSTRIES, INC., and LAVOIE LABORATORIES, INC.,
Respondents.

MOTION OF THE THIRD PARTY DEFENDANT THE HICKOK ELECTRICAL INSTRUMENT COMPANY FOR LEAVE TO FILE PETITION FOR WRIT OF CERTIORARI

and

PETITION FOR A WRIT OF CERTIORARI TO THE UNITED STATES COURT OF CLAIMS

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PRESS OF BYRON S. ADAMS PRINTING, INC., WASHINGTON, D. C.

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MOTION OF THE THIRD PARTY DEFENDANT THE HICKOK ELECTRICAL INSTRUMENT COMPANY FOR LEAVE TO FILE PETITION FOR WRIT OF CERTIORARI

The Third Party Defendant, The Hickok Electrical Instrument Company (Hickok), hereby moves for an order to permit Hickok to file a Petition For a Writ of Certiorari on its and the United States' behalf.

BACKGROUND OF THE CASE

This case was initiated by plaintiff Tektronix, Inc. in the United States Court of Claims on July 5, 1961 pursuant to 28 U.S.C. § 1498, to recover reasonable compensation for the unauthorized manufacture and/or use of oscilloscopes by or for the United States which include inventions covered by certain of plaintiff's U. S. patents.

On *July 18, 1961,* the Court of Claims notified Hickok, pursuant to 41 U.S.C. § 114(b), to enter into this case and to assert any claim and/or interest that Hickok may have therein.

The Court's Notice also advised Hickok that if it failed to appear, its claim or interest would be forever barred.

The Court of Claims' jurisdiction over third parties impleaded under 41 U.S.C. § 114(b) was more recently considered by that same Court in 1970 in the case of:

> *Bowser, Inc.* v. *United States,* Case No. 25-61 decided Jan. 23, 1970

wherein Chief Judge Cowen speaking for the full court held:

> "... We think there is implicit in the whole plan and purpose of Subsection 14(c) a congressional intent that the issues of fact and law decided in a suit against the United States in the Court of Claims may not be retried in another court at the instance of a third party, who had a 'possible' interest in the case in this court but who failed to appear and protect his interest after timely notice or summons had been served upon him. A holding to the contrary would ignore the principal reasons which led Congress to enact the law. We think our conclusion in this regard is also in accord with the general principles of law applicable in such situations. These principles are summarized in Corpus Juris Secundum as follows:
>
> > *Notice of action and opportunity to intervene.* It has even been held that if a person who has such an interest in the subject matter as would be injuriously affected by the judgment, or is in privity with, or bound to indemnify, one of the parties, has notice of the pendency of the action and refuses or neglects to appear and avail himself of his rights, he will be concluded by the judgment, although he was not named as a party to the action. A fortiori such person will be concluded if he appeared and participated in the trial or authorized a party to the action to protect his rights. 50 C.J.S. Judgments Sec. 768 (1947).
>
> These principles of law are also expounded in decisions of the Federal courts. See, e.g., Souffront v. Compagnie Des Sucreries, 217 U.S. 475, 487 (1910) (non-party who assists in defense if fully bound); Grummons v. Zollinger, 341 F.2d 464, 465 (7th Cir. 1965); Miller & Co. of Birmingham v. Louisville & N.R. Co., 328 F.2d 73, 78 (5th Cir.) cert. denied, 377 U.S. 966 (1964) (non-appearing indemnitor given due notice and opportunity to defend is bound)."

Hence, Hickok, faced with a foreclosure of its interests if it failed to appear, did make its formal appearance as a Third Party Defendant on September 5, 1961, and has actively participated from said date in the defense of this case, and is bound by the decision in this case.

And, by reason that it is the Government's Indemnitor with respect to certain of the procurement contracts that are now in issue in this case, Hickok has a direct pecuniary interest in the final outcome herein, for if the Government is required to pay plaintiff (Tektronix) damages (which the Court of Claims has thus far ruled are to be paid) Hickok may be required to pay such damages that come within the indemnity pro-

vision of the aforesaid procurement contracts; of which provision reads in part as follows:

> "*General Provision 26, 'Patent Indemnity (Predetermined)':* (JAN 1955)
>
> If the amount of this contract is in excess of $5,000, the Contractor shall indemnify the Government and its officers, agents, and employees against liability including costs, for infringement of any United States letters patent (except letters patent issued upon an application which is now or may hereafter be kept secret or otherwise withheld from issue by order of the Government) arising out of the manufacture or delivery of supplies or out of construction, alteration, modification, or repair of real property (hereinafter referred to as 'construction work') under this contract, or out of the use or disposal by or for the account of the Government of such supplies or construction work. The foregoing indemnity shall not apply unless the Contractor shall have been informed as soon as practicable by the Government of the suit or action alleging such infringement, and shall have been given such opportunity as is afforded by applicable laws, rules, or regulations to participate in the defense thereof; and further, such indemnity shall not apply if: . . . (iii) the claimed infringement is settled without the consent of the Contractor, unless required by final decree of a court of competent jurisdiction."

It is therefore submitted that the third party defendant The Hickok Electrical Instrument Company has an undeniable right under 41 U.S.C. § 114(b) to continue in its participation in this case, inasmuch as it was ordered to appear by the Court of Claims pursuant to 41 U.S.C. § 114(a) or to be forever barred from contesting any final decision of that Court.

Under 28 U.S.C. § 1255, cases in the Court of Claims may be reviewed by the Supreme Court:

> (1) By writ of certiorari granted on petition of the United States or the claimant; . . . .

See also Supreme Court Rule 21 which states in part:

> . . . . (4) All parties to the proceeding in the court whose judgment is sought to be reviewed shall be deemed parties in this court, ...

The third party defendant, The Hickok Electrical Instrument Company, should therefore be permitted, by reason that it is a party in this case and that it was ordered by the Court of Claims to make its appearance or to be forever barred from contesting any final decision of that Court, to file a petition for writ of certiorari on its behalf and on behalf of the United States, in order that its constitutional right to have a full hearing of the merits of this case under the principle of due process are not denied or diminished.

Respectfully submitted,

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Attorney for Hickok Electrical Instrument Company

IN THE

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THE HICKOK ELECTRICAL INSTRUMENT COMPANY,
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v.

TEKTRONIX, INC., et al., *Respondents.*

PETITION FOR A WRIT OF CERTIORARI TO THE UNITED STATES COURT OF CLAIMS

The Hickok Electrical Instrument Company, a Third Party Defendant, petitions for a writ of certiorari to review the judgment of the United States Court of Claims in Case No. 79-61.

OPINIONS BELOW

The opinion of the trial judge of the Court of Claims is not officially reported but may be found at 188 U.S.P.Q. 25. The opinion of the Court of Claims (App. A *infra* 1a) is reported at 552 F.2d 343. The amendment on rehearing to the Court's opinion may be found at 557 F.2d 265. Final judgment against the United States may be found at 575 F.2d 832.

JURISDICTION

The Court of Claims announced its opinion with respect to the question presented here in March 23, 1977 (552 F.2d 343).

Except for amendments to its original opinion, the Court denied both parties' motions for rehearing. (557 F.2d 265). Final judgment of the Court of Claims was entered on April 19, 1978 (575 F.2d 832). Defendant's Timely Motion for Rehearing was denied on May 26, 1978. By letters dated August 17, 1978 and September 13, 1978 from the Clerk of the Supreme Court the parties have been notified that the time for filing a petition for writ of certiorari was extended to October 23, 1978. Jurisdiction of this Court is invoked under 28 U.S.C. § 1255.

QUESTION PRESENTED

The question presented to this Court concerns the determination of what is "reasonable and entire compensation" due a patent holder under 28 U.S.C. § 1498(a) by reason of the government's unauthorized use of his patents.

(1) Whether non-exclusive cross-license agreements entered into by the patent holder under the same patents with others in the commercial marketplace in the same period of time may be ignored by the Court in its determination of "reasonable and entire compensation" under 28 U.S.C. § 1498(a).

STATUTE INVOLVED

28 U.S.C § 1948(a) provides in pertinent part:

> Whenever an invention described in and covered by a patent of the United States is used or manufactured by or for the United States without license of the owner thereof or lawful right to use or manufacture the same, the owner's remedy shall be by action against the United States in the Court of Claims for the recovery of his reasonable and entire compensation for such use and manufacture.
>
> For the purpose of this section, the use or manufacture of an invention described in and covered by a patent of the United States by a contractor, a subcontractor, or any person, firm, or corporation for the Government and with the authorization or consent of the Government, shall be construed as use or manufacture for the United States.

STATEMENT OF THE CASE

In *Tektronix* v. *United States,* 445 F.2d 323, the Court of Claims upheld the validity of eight patents and ruled that the United States infringed said patents by procurement of oscilloscopes from the petitioner.

The phase of the litigation pertinent herein involves the computation of the "reasonable and entire compensation" due to respondent under 28 U.S.C. § 1498(a).

The Court, in its decision 552 F.2d 343 (App. A p. 13a) has awarded Tektronix, as reasonable and entire compensation pursuant to 28 U.S.C. § 1498(a) an amount which is approximately 10% of the total value of the Government's procurement contracts.

In granting this award, the Court did not consider pertinent the license agreements which the respondent Tektronix has entered into in the "commercial field" with other major electronic manufacturers; i.e., Hewlett-Packard, RCA, and Western Electric, and which license agreements include the same patents in suit, on the premise that these license agreements were royalty-free cross-licenses and did not establish a monetary

royalty which could be an appropriate basis for determining "reasonable and entire compensation" due respondent herein under 28 U.S.C. § 1498(a).

Judge Kashiwa dissented from the majority opinion (App. A, pp. 23a-41a). He would have limited Tektronix's compensation to the rate of effective royalty which it had established in the commercial field with respect to these cross license agreements with RCA, Western Electric, and Hewlett-Packard.

In Judge Kashiwa's view, the evidence established:

> ". . . that from 1953 up to September 1, 1957, plaintiff was a licensee under RCA's licenses which covered measuring and testing devices (Tr. 3812). Licenses for measuring and testing devices included patents on oscillographs. Plaintiff actually paid RCA royalties for these RCA licenses from 1953 to 1957; this was shown by royalty reports made by plaintiff to RCA. (Defendant's Ex. DA-31E, F and G). The royalty plaintiff paid RCA in said years was based on 1.5 percent for commercial units but 1 percent for Government sales (see Ex. DA-31D). On September 1, 1957, plaintiff and RCA entered into a [royalty-free] cross licensing agreement [whereby Tektronix was no longer required to pay the 1.5 percent and 1.0 percent royalties to RCA in exchange for granting RCA a royalty-free license under Tektronix patents]. (EX DA-31D). (Tr. 3874) . . . .
>
> As for the plaintiff-Western Electric cross license [the evidence] showed that Western Electric owned patents on transistors which plaintiff used in the manufacture of its oscillographs. Plaintiff found the use of these patents necessary. Western's patents on the transistors were licensed to plaintiff by Western Electric. The rates on these one-way Western Electric to plaintiff transistor licenses were high; so plaintiff negotiated a lower, 1.5 percent, rate in exchange for royalty free use of plaintiffs' patents by Western. This was the Western Electric-plaintiff cross license (Tr. 262, 264, 270)."

Judge Kashiwa also stated:

> "By cross licenses plaintiff granted RCA, Western Electric and Hewlett-Packard the right to use plaintiff's patents in return for plaintiff's right to use their patents. The quid pro quo was the license each company exchanged. Therefore, if the licenses granted to plaintiff can be valued, their respective values, in turn, would established the royalty value of plaintiff's license herein issue. This court must then, under the Calhoun rule, use the established rate to compute reasonable and entire compensation. In analyzing the cross license arrangement between plaintiff and RCA, Mr. Glassman, the expert Government witness, succinctly phrased it:
>
> > * * * under the royalty-free cross license, which included a royalty-free license to RCA under the Plainti's oscilloscope patents, RCA was giving up in return the opportunity to receive an effective royalty of 1.375 percent from the Plaintiff, and the Plaintiff was therefore in effect licensing RCA at an effective royalty rate of 1.375 percent of the Plaintiff's own sales. (Tr. 3876).
>
> . . . . Plaintiff, by entering into cross license agreements with RCA, Western Electric and Hewlett-Packard, evaluated its own license; that value should not bind the plaintiff in the instant reasonable and entire compensation determination . . ."

The Court, by adopting a 10 percent royalty as "reasonable and entire" compensation under 28 U.S.C. § 1498, while ignoring the license agreements Tektronix

has entered into in the "commercial field" with the same patents, has placed in substantial jeopardy the ability of a relatively small non-licensed manufacturer, such as are represented by the third party defendants here who have been otherwise qualified by the government, to be a source for government procurement.

REASONS FOR GRANTING THE WRIT

In awarding respondent Tektronix $2.24 million dollars in royalty compensation, the Court of Claims has materially departed from the long standing rule that the actual terms of license agreements of the same patents as are involved in suit is the best standard to determine what is "reasonable and entire" compensation under 28 U.S.C. § 1498(a).

RCA and Western Electric under consent decrees both have agreed to license their patents at "reasonable royalties", and over the course of years, pertinent to this case, have entered into numerous such licenses.

It is submitted that the license agreements entered into between respondent Tektronix and RCA, the said respondent and Western Electric are each this type of license agreement for "reasonable and entire compensation" and represent the best indication of the value that respondent Tektronix places upon and has accepted for its patents.

The Court of Claims rejected this analysis on the basis that respondent Tektronix was not comparable in size or possessed of either "a comparable patent portfolio or comparable product line." (App. A. p. 8a). This is plain error. The Court focused on the wrong issues, it should have focused on the *value* which respondent Tektronix placed on its patents.

By analogy, the value of a house is determined by the value it has in the marketplace NOT by the owner.

In like manner, respondent Tektronix has voluntarily determined the value of its patents in the aforementioned license agreements with RCA and Western Electric whereby respondent has exchanged its one-way royalty bearing license with RCA which required payment of 1.5 percent for commercial sales and 1 percent for government sales for a royalty-free cross license of the same patents as are herein involved. And, respondent has also exchanged a one-way license agreement with Western Electric for use of Western Electric's patents for a cross-license agreement whereby respondent pays a 1.5 percent royalty for use of Western Electric's patents and Western Electric has a royalty free use of respondent's patents. (App. A, p. 28a).

Clearly, these exchanges are the best evidence of the accepted value of the patents in suit rather than tenuous analysis of a hypothetical negotiation as undertaken by the court below. In essence, petitioner urges that real facts of the case and the realities of the marketplace as has been openly demonstrated by arm's length transactions by the respondent should take precedence over a hypothetical construct.

Petitioner also submits that this case will have a pernicious influence on future compensation cases under 28 U.S.C. § 1498. It will increase beyond all reasonableness the amounts of judgments against the Government in patent infringement and eminent domain suits, as has occurred in this case in the decision below. Claimants in such suits against the Government will have it within their power to bypass the litmus test of market-

place acceptance and establish an arbitrary and excessive value of their pate by the simple expedient of refusing to grant licenses.

Under certain circumstances the Government is entitled to be indemnified for patent infringement, as would a private citizen under the Uniform Commercial Code. The vehicle for such indemnification of the Government, relating to military procurement, is the indemnity clause set forth in Section 7-104.5 of the Armed Services Procurement Regulation. When the sale involves commercially available goods, this clause is "mandatory" and must be included in a contract with the Government, as it was with respect to some of the oscilloscopes purchased by the Government from petitioner, Hickok, and others in the present case. Acceptance of the standard of 10 percent for "reasonable and entire compensation" established by the court below will compel contractors to refuse to accept indemnity clauses for there would be no means by which the Contractor could estimate the extent of his potential liabiliay. If a contractor were, under the pressure of business circumstances, forced to accept an indemnity clause following the present decision of the court below, he would necessarily have to assume royalty rates of 10 percent for the patents in question and include such costs in his pricing. These costs would understandably and expectedly be rejected by the Government as not having been included within the commercial price for the article

The clearly inevitable result of the decision below will be to seriously disrupt Government-Contractor relations and interfere with the necessary, expeditious handling of military contracts.

CONCLUSION

The Petition for a Writ of Certiorari should be granted.

Respectfully submitted,

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APPENDIX

In the United States Court of Claims

No. 79–61

(Decided March 23, 1977)

TEKTRONIX, INC. v. THE UNITED STATES and THE HICKOK ELECTRICAL INSTRUMENT COMPANY, JETRONIC INDUSTRIES, INC., and LAVOIE LABORATORIES, INC., Third-Party Defendants.

Robert C. Miller, attorney of record, for plaintiff; *Norman Eric Jorgensen*, of counsel.

Thomas J. Scott, Jr., with whom was *Assistant Attorney General Rex E. Lee*, for defendant.

Richard J. Egan, attorney of record, and *Baldwin, Egan, Walling & Fetzer*, of counsel, for Third Party Defendant The Hickok Electrical Instrument Company.

Boris Haskell, attorney of record, for Third Party Defendant Jetronic Industries, Inc.

Robert E. Burns, attorney of record, for Third Party Defendant Lavoie Laboratories, Inc.

Before COWEN, *Senior Judge*, DAVIS, SKELTON, NICHOLS, KASHIWA, KUNZIG and BENNETT, *Judges*, *en banc*.

OPINION

DAVIS, *Judge*, delivered the opinion of the court:

In *Tektronix, Inc. v. United States*, 195 Ct. Cl. 53, 445 F.2d 323, 170 U.S.P.Q. 100 (1971), claims in eight patents owned by plaintiff were held to be valid and infringed. The present task is to fix the reasonable compensation to which plaintiff is entitled under 28 U.S.C. § 1498, including a sum for the delay in payment. Former Trial Judge Cooper concluded that Tektronix should recover the basic amount of $4,831,773, plus compensation for delay computed at simple interest (varying from 4.60% in 1960 to 6.59% in 1969) on the amounts allocable to the individual years in which infringement occurred, such interest to be paid until the principal sum is satisfied. Both sides have sought review, both as to the principal amount and as to delay compensation. Though we agree with, and borrow from, much of the trial judge's reasoning, we come to different results on both the basic compensation and the delay payments.

I.

The patents in suit relate to oscilloscopes and their electronic circuitry. Since defendant now concedes that all of the oscilloscopes here accused are covered by one or more claims of one or more of the patents, it is unnecessary to discuss in detail either the patents or the accused devices. However, it is pertinent to note the importance of the patents in suit and the impact they have had on the industry.

Plaintiff was organized in 1946, specifically to manufacture oscilloscopes designed by its then-president Howard Vollum. Research and development, funded by plaintiff, ultimately led to the model 516, 535, 535A, 545, and 545A oscilloscopes, all of which embody the patents in suit.[1] These oscilloscopes (or scopes) met with resounding success upon entering competition with those manufactured by nationally known competitors. They were deemed at the time to be superior in engineering and performance to all

[1] Patent No. 2,883,619 is concerned with electrical probes used with these scopes. The evidence is insufficient to make any determinations regarding reasonable compensation for use of that particular patent.

other scopes in their class and defendant purchased them in substantial numbers.

In 1958, apparently desirous of having alternative sources of supply and not wishing to pay plaintiff's price,[2] defendant issued an invitation for bids, inviting manufacturers to submit bids on an oscilloscope which was to consist of "one each oscilloscope subassembly MX-2330( )/G; Tektronix, Inc. Model 535," and "one each preamplifier AN-1839( )/USM; Tektronix, Inc. type 53/54C." The Hickok Electrical Instrument Company responded to the invitation and agreed to furnish a "Tektronix, Inc. Model 535 as manufactured by Hickok."

To fulfill this contract, Hickok purchased a 535 oscilloscope from Tektronix and began to manufacture copies. Subsequently, two other companies, Jetronic Industries and Lavoie Laboratories, Inc.,[3] were awarded contracts to manufacture competing copies of the Tektronix scopes. It is clear from the evidence that defendant, unable to obtain comparable, noninfringing scopes from alternative sources, tailored its procurement specifications in such a way as to make infringement of plaintiff's patents a virtual prerequisite for obtaining the Government contracts. By essentially copying plaintiff's instruments, and without incurring the costs of engineering and developing the instruments, the third-party defendants (Hickok, Jetronic, Lavoie) were able to underbid plaintiff on contracts for the procurement of these scopes. This, of course, resulted in substantial savings to defendant, both on the purchase of the scopes and on the purchase of the related, but unpatented, plug-ins used with the scopes. Defendant realized these savings while at the same time taking advantage of plaintiff's extensive service and field organization to help with the training of its employees in the use and servicing of the infringing scopes.

The period of infringement extended from 1959 to 1969 and involved the procurement by defendant of 17,542

[2] Plaintiff's catalog prices remained constant at $1,400 for the model 535 and $1,550 for the model 545 scopes, respectively, from 1959 to 1968. Throughout this period, plaintiff maintained a volume discount policy on its sales.

[3] Lavoie is now bankrupt and has not participated in these accounting proceedings.

scopes at a net cost (for scopes only) of approximately $16,944,840. The infringing scopes bear the model designations 1805, 1805A, USM/81, LA261, LA265, LA265A, LA545, AN/USM-105, AN/USM-140, and AN/USM-141.

With the exception of the last three models, each of those scopes was supplied to the Government in direct competition with plaintiff's commercial scopes. The remaining three scopes, comprising 8,437 of the total, although embodying the circuits of the patents in suit, were militarized or more rugged versions developed by the Hewlett-Packard Company which had attempted to design around plaintiff's patents but, finding it could not, had requested and was granted a cross-license arrangement with plaintiff. Plaintiff did not market, and did not seek to bid on, scopes of this type, choosing to restrict its efforts to the commercial scopes. Hickok and Lavoie did, however, bid on and receive contracts for supplying these militarized scopes and, in so doing, extended their infringing activities.

II.

The parties[4] are in agreement that plaintiff has no established licensing program or royalty applicable to the patents in this accounting. Beyond that, however, they have urged wholly divergent theories of recovery in the Trial Division and before the court on review. The polar nature of their respective views is revealed by a comparison of the end result each party arrives at as to what constitutes reasonable and entire compensation. Not including delay damages, defendant's sum is on the order of $185,445, while plaintiff's sum is set at $12,094,638. The disparity in their positions also extends to the issue of delay damages where plaintiff contends for damages up to $25,005,090, while defendant proposes a much more modest $91,590.

Defendant's basic theory, premised on *Badowski* v. *United States*, 150 Ct. Cl. 482, 278 F. 2d 934, 137 U.S.P.Q. 656 (1960), and *Saulnier* v. *United States*, 161 Ct. Cl. 223,

[4] The third parties have, for all practical purposes, embraced the position of defendant, so it is unnecessary to discuss their individual views.

314 F. 2d 950, 137 U.S.P.Q. 222 (1963), lumps all the infringing devices into one category and leads to a reasonable and entire compensation equivalent to a nominal sliding-scale royalty based on the selling price of the oscilloscope only, without regard to any unpatented ancillary equipment sold with the scope. As a guide for selecting a suitable royalty rate, defendant relies on the licensing practices of RCA and Western Electric, both of which granted licences in the commercial electronics field at rates ranging from 2% down to 1%, the latter rate being applicable to sales to the Department of Defense. Defendant suggests that a sliding scale of 1.5% on the first $2 million, 1.2% on the next $3 million, and 1% on the remainder, would be appropriate here.

Plaintiff, on the other hand, divides the contracts for the procurement of infringing scopes into two categories, the first being those contracts that, in its view, would have been awarded to plaintiff "but for" the infringement, while the second consists of those contracts for the rugged or militarized scopes on which plaintiff did not bid and which it could not have supplied. With respect to the first category, plaintiff asks for an amount that would place it in as good a pecuniary position as it would have been had it received the infringing procurement. In short, plaintiff seeks lost profits, its authority consisting principally of two cases: *Imperial Machine & Foundry Corp.* v. *United States*, 69 Ct. Cl. 667, 5 U.S.P.Q. 332 (1930), and *Waite* v. *United States*, 69 Ct. Cl. 153, 4 U.S.P.Q. 387 (1930), *rev'd on other grounds*, 282 U.S. 508 (1931). As to the second category, plaintiff concedes a lost-profit theory is inapplicable and contends that compensation must be determined by adopting a reasonable royalty based on a willing-buyer/willing-seller concept as enunciated in *Georgia-Pacific Corp.* v. *U.S. Plywood-Champion Papers, Inc.*, 446 F. 2d 295 (2d Cir. 1971), 170 U.S.P.Q. 369, *cert. denied*, 404 U.S. 870 (1971).

III.

It is settled that recovery of reasonable compensation under § 1498 is premised on a theory of an eminent domain

taking under the Fifth Amendment. *Calhoun* v. *United States*, 197 Ct. Cl. 41, 51, 453 F. 2d 1385, 1391, 172 U.S.P.Q. 438 (1972); *Pitcairn, Agent* v. *United States*, U.S. Ct. Cl. No. 50328, decided Dec. 15, 1976. The Supreme Court has in many cases emphasized that basic equitable principles of fairness are the governing consideration in determining just compensation for an eminent domain taking. In *Almota Farmers Elevator & Warehouse Co.* v. *United States*, 409 U.S. 470 (1973), it was stated, at 473–74:

> The Fifth Amendment provides that private property shall not be taken for public use without "just compensation." "And just compensation means the full monetary equivalent of the property taken. The owner is to be put in the same position monetarily as he would have occupied if his property had not been taken." *United States* v. *Reynolds*, 397 U.S. 14, 16 (footnotes omitted). See also *United States* v. *Miller*, 317 U.S. 369, 373. To determine such monetary equivalence, the Court early established the concept of "market value": the owner is entitled to the fair market value of his property at the time of the taking. *New York* v. *Sage*, 239 U.S. 57, 61. See also *United States* v. *Reynolds*, *supra*, at 16; *United States* v. *Miller*, *supra*, at 374. And this value is normally to be ascertained from "what a willing buyer would pay in cash to a willing seller." *Ibid.* See *United States* v. *Virginia Electric & Power Co.*, 365 U.S. 624, 633.
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> • • • • •

And, at 478:

> "The constitutional requirement of just compensation derives as much content from the basic equitable principles of fairness, *United States* v. *Commodities Trading Corp.*, 339 U.S. 121, 124 (1950), as it does from technical concepts of property law." *United States* v. *Fuller*, *post*, at 490. It is, of course, true that Almota should be in no better position than if it had sold its leasehold to a private buyer. But its position should surely be no worse.

Those same principles have long guided this court in its assessment of reasonable compensation. For example, in *Olsson* v. *United States*, 87 Ct. Cl. 642, 659–60, 25 F. Supp. 495, 499 (1938), 37 U.S.P.Q. 767, 770, *cert. denied*, 307 U.S. 621 (1939), it was said:

> • • • The rule to be applied in measuring the compensation depends upon the facts and circumstances of each case, but the end to be obtained in every case is always the same, namely, the determination and allowance of just compensation to the patentee for the value to him of the right or license to use appropriated by the Government. *Richmond Screw Anchor Company* v. *United States*, 275 U.S. 331; • • • *The Berdan Fire-Arms Manufacturing Company* v. *United States*, 26 C. Cls. 48, 82. • • •

Where an established royalty rate for the patented inventions is shown to exist, that rate will usually be adopted as the best measure of reasonable and entire compensation. *See, e.g., Carley Life Float Co.* v. *United States*, 74 Ct. Cl. 682 (1932). But where no such royalty is shown, alternative methods must be employed.[5]

IV

In this case, it is necessary to adopt a method other than reliance on an established royalty for ascertaining what would be reasonable. However, neither defendant's nominal sliding-scale royalty nor plaintiff's lost-profit theory provides a satisfactory basis on which to base a decision in this case.

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[5] Even an established royalty may be modified upward, *Meurer Steel Barrel Co.* v. *United States*, 85 Ct. Cl. 554, 34 U.S.P.Q. 123, *cert. denied*, 302 U.S. 754 (1937), or downward, *Fauber* v. *United States*, 112 Ct. Cl. 302, 81 F. Supp. 218, 79 U.S.P.Q. 410 (1948), *cert. denied*, 337 U.S. 906 (1949), depending on the circumstances of the case. Where no established royalty is found, one may be selected on the basis of royalty rates for related patents, *Breese Burners, Inc.* v. *United States*, 140 Ct. Cl. 9, 115 U.S.P.Q. 179 (1957). A settlement rate may be considered, *Saulnier* v. *United States*, 161 Ct. Cl. 223, 314 F. 2d 950, 137 U.S.P.Q. 222 (1963), or other contracts between the parties may be used as a guide, *Barlow* v. *United States*, 87 Ct. Cl. 287, 34 U.S.P.Q. 127 (1937). Savings realized by the defendant as a result of the infringement are sometimes used as a measure of compensation, *Shearer* v. *United States*, 101 Ct. Cl. 196, 60 U.S.P.Q. 414, *cert. denied*, 323 U.S. 676 (1944); *Olsson* v. *United States*, 87 Ct. Cl. 642, 25 F. Supp. 495, 37 U.S.P.Q. 767 (1938), *cert. denied*, 307 U.S. 621 (1939), and lost profits have been awarded. *Imperial Machine & Foundry Corp.* v. *United States*, 69 Ct. Cl. 667, 5 U.S.P.Q. 332 (1930); *Waite* v. *United States*, 69 Ct. Cl. 153, 4 U.S.P.Q. 387 (1930), *rev'd on other grounds*, 282 U.S. 508 (1931).

A.

The Government's proposal is rejected because the evidence on which it is premised is not at all analogous to the facts here. Defendant relies on the licensing programs of RCA and Western Electric but it seems clear that plaintiff—which was not a company comparable in size to those corporate giants, nor possessed of either a comparable patent portfolio or a comparable product line, nor under the spur of an anti-trust decree—should not be governed by the same considerations. Items such as transistors, tubes, and similar electronic components are comparatively simple in structure, have a relatively low per-unit cost, and are sold and used in very large quantities. Plaintiff's oscilloscopes, on the other hand, are much more complex, have a much higher per-unit cost, and the quantities sold are much lower.[6] Moreover, the evidence is that during the 1960's, plaintiff was realizing on its commercial sales an average profit of 23.7% on the 535 scope and 27.7% on the 545 scope, those figures reflecting plaintiff's margin on these products after both direct and indirect costs had been considered. In view of those figures, defendant's suggestion that plaintiff should be forced to accept a declining royalty starting at 1½% for its inventions could not, without the greatest difficulty, be accepted as just compensation for use of the patents.

B.

With respect to plaintiff's lost-profit contention, there is no doubt that plaintiff was ready, willing, and able to supply defendant's needs for commercial scopes. But even if we assume that lost profit is still a viable measure of recovery under 28 U.S.C. § 1498, we cannot adopt that standard in this case because it has not been sufficiently shown by clear and convincing evidence that plaintiff would actually have supplied all the "commercial" scopes the Government bought from the third-party respondents,

[6] Defendant also puts forward the Raytheon licensing program, but Raytheon's subminiaturized tubes are very different from oscilloscopes and hardly comparable.

or that if plaintiff had been the source of those items it would have made and kept the profits it now demands. For one thing, Tektronix had granted a paid-up cross-license under the patents in suit to Hewlett-Packard which was legally competent to bid against plaintiff for the sale of "commercial" scopes to the Government. Hewlett-Packard did not in fact bid against the third-party defendants with their low prices, but it is too much of a leap to assume that it would not have competed with plaintiff if the latter had alone been bidding, at its much higher prices, for the Government business. As evidenced by the scale of plaintiff's earnings on its non-Government sales, the profits to be made by an authorized seller, at the high prices legally available to it, may very well have lured Hewlett-Packard to enter the field. There is, in short, inadequate proof that, if the Government business had had to be confined to authorized sellers, plaintiff rather than Hewlett-Packard would have gotten it. By the same token there is no adequate proof that any share taken by plaintiff would have been at the level of prices or profit to which plaintiff was accustomed. The potential competition of Hewlett-Packard may have forced or induced Tektronix to cut its profits on Government sales—or the impact of the Renegotiation Act may have reduced the profits it now says it would have made. If lost profits are ever to be awarded under § 1498, it should be only after the strictest proof that the patentee would actually have earned and retained those sums in its sales to the Government. That kind of demonstration does not exist in this case.

We are constrained to point out, in addition, that in any event plaintiff's "lost profits" (assuming that they were absolutely certain) would be so high as to amount to excessive compensation, rather than the just compensation payable under the Fifth Amendment. *See* Part V, *infra*.

V.

Like the trial judge we conclude that the best method of computing compensation in this case is to adopt the approach of establishing a reasonable royalty for both the

commercial and the militarized scopes. That method, exemplified by the *Georgia-Pacific* case, *supra*, involves a willing-buyer/willing-seller concept, in which a suppositious meeting between the patent owner and the prospective manufacturer of the infringing item is held to negotiate a license agreement.[7] In *Georgia-Pacific*, the court reasoned that had the infringer taken a license rather than infringe, the infringer would have been willing to pay as a royalty the sale price of the patented article as sold by the infringer, minus the cost of manufacture of the article and minus the infringer's usual profit. In that case, the infringer's usual profit was 9% so that 9% of the selling price was deducted from the profit pool generated by the sale of the patented article and awarded to the infringer, while the remainder of the profit constituted the royalty to be remitted to the patentee. On the facts in that case, the royalty, expressed as a percentage, was 22.36% of the infringer's sale price.

Defendants object to employing a willing-buyer/willing-seller approach, asserting that plaintiff has never been willing to grant any of the defendants a license under these patents. Of course, whether this is the fact or whether, as plaintiff contends, defendants were never willing to pay a reasonable royalty, is irrelevant. The willing-buyer /willing-seller concept is, as Judge Learned Hand termed it, "a device in aid of justice," *Cincinnati Car Co.* v. *New York Rapid Transit Corp.*, 66 F. 2d 592, 595, 19 U.S.P.Q. 40 (2d Cir. 1933). As such it is employed by the court as a means of arriving at reasonable compensation and its validity does not depend on the actual willingness of the parties to the lawsuit to engage in such negotiations.

Although we accept the trial judge's general approach, we depart from his application of the willing buyer/willing

[7] This willing-buyer/willing-seller technique in determining a reasonable royalty has not been a stranger to the Court of Claims. *Olsson v. United States*, *supra*; *Badowski v. United States*, 150 Ct. Cl. 482, 485, 278 F.2d 934 (1960); *Ushakoff v. United States*, 179 Ct. Cl. 780, 785–86, 375 F.2d 822, 825, 153 U.S.P.Q. 410 (1967); *Amerace Esna Corp. v. United States*, 199 Ct. Cl. 175, 462 F.2d 1377, 174 U.S.P.Q. 517 (1972). For cases from other courts, see, e.g., *Jenn-Air Corp. v. Penn Ventilator Co.*, 394 F.Supp. 665, 185 U.S.P.Q. 410 (E.D. Pa. 1975).

seller criterion. We reconstruct, as he did, a hypothetical negotiation in 1959 between Hickok, the first prospective infringer, and plaintiff; the subject of the negotiation would be the patent rights to the oscilloscope Hickok intended to supply to defendant. The negotiation formula which the trial judge borrowed from *Georgia-Pacific* is, as already mentioned, to start with the infringer's selling price, deduct its costs in order to find its gross profit, then allocate to the infringer its normal profit, and end up with the residual share of the gross profit which can be assigned to the patentee as its royalty. We utilize the same formula as the beginning of our suppositious negotiation, and likewise start with Hickok's proposed selling price—but thereafter our calculation differs from the trial judge's:

Hickok's proposed selling price	$1,137
Costs:	
Direct or variable manufacturing	486[8]
Fixed burden, marketing, administration, etc.	533[9]
Costs subtotal	1,019
Gross profit	118
Hickok Profit	31[10]
Residual Share (7.65% of unit price)	87

The trial judge's computation (using the above format but different figures, as explained in notes 8–10) resulted in a residual share of 27.5% of the unit price, all of which he allocated to plaintiff as its reasonable royalty. We disagree with that result (as indicated in the above notes) prin-

[8] This figure is the same as the trial judge's and is based on *plaintiff's* 1959 direct cost, Hickok's cost not being available.

[9] The trial judge based his figure ($256) on an *estimate* of *plaintiff's* indirect costs for 1959 (plaintiff's actual indirect costs for 1959 are not available) but did not include the amounts paid to employees under the profit-sharing program. Our figure of $533 includes the profit-sharing expenses (treated as wages) and is based on extrapolation backward from plaintiff's 1961 actual cost. In the absence of acceptable cost data from Hickok, we use (as did the trial judge) plaintiff's more accurate cost data for 1959 and 1961, but unlike the trial judge we assume that the 1961 indirect costs increased over 1959 in the same proportion as did the direct costs.

[10] Based on Hickok's average profit from 1960 to 1968 of 2.7%. The trial judge's number of $82 was based on the profit rate of 7.23%, taken from Hickok's figures for the particular contract which was the basis of the calculation and adjusted for profit-sharing. The defendant would use $65, Hickok's actual profit under the particular contract used as the initial basis of the calculation.

cipally because it understates the indirect costs of manufacture and thus inflates the residual share.

The defendant's recomputation leads to a residual share of 4.6% of unit price which it is willing to give to plaintiff (if defendant's primary contention based on the Western Electric-RCA-Raytheon licenses is rejected, as we have in Part IV, B, *supra*). That conclusion we also reject because, in our view, it assigns a larger profit to the potential infringer (Hickok) than the latter actually experienced over the infringement period and would be willing (in our view) to anticipate; defendant's computation therefore leaves too small a residual share for plaintiff. Hickok would be satisfied, we think, with a relatively low profit because the product to be made by it under plaintiff's patents would not involve any unusual risks or require large-scale investments in marketing, advertising, or tooling.

We do not, however, stop with the 7.65% of unit price which our own calculation produces for plaintiff's residual share. We think that a reasonable patentee in the position of plaintiff, which was realizing a profit in excess of 25% on its own non-Government sales of oscilloscopes, would have insisted on a somewhat higher royalty than 7.65%, and that a reasonable potential licensee would have agreed, in order to be able to sell the item without legal question—even if at a somewhat higher price than if no royalty were to be paid. Such a potential licensee, if reasonable, would recognize that plaintiff, which took the risks and bore the expense of developing the scopes and creating a market for them, was entitled to substantial compensation for those efforts and for its ingenuity in creating this important and effective instrument. But we do not believe that such a reasonable potential licensee would be willing, or could be expected to be willing, to pay as a royalty the 25% or so plaintiff was making in profit on its own non-Government sales of scopes.[11] A portion of that 25% profit represented

[11] In the trial judge's opinion plaintiff's profits could go as high as 60% but plaintiff insists that, if its overhead were properly distributed over all sales, profits would be in the range of 25–27%.

compensation, not for the patented idea itself, but for the efficiencies and risks of manufacture as well as the investment of other capital. Certainly that portion of plaintiff's profit is separate and apart from any compensation due it for use of its patents. In any event, a royalty of 25% is very high and unlikely to be paid by a willing licensee which is content to make a very low profit for itself.

We select 10% as the proper royalty rate. This represents our best judgment, on the material we have before us, of what reasonable "parties might well have agreed upon" (*Saulnier* v. *United States*, *supra*, 161 Ct. Cl. at 227, 314 F.2d at 952, 137 U.S.P.Q. at 224), "what the parties would have agreed upon, if both were reasonably trying to reach an agreement" (*Amerace Esna Corp. v. United States*, *supra*, 199 Ct. Cl. at 182, 462 F.2d at 1380, 174 U.S.P.Q. 517). One may label this as akin to a "jury verdict" but, in the absence of hard proof warranting the use of more precise standards, the "whole notion of a reasonable royalty is a device in aid of justice, by which that which is really incalculable shall be approximated. * * * It is no more impossible to estimate than the damages in many other torts * * *." *Cincinnati Car Co.* v. *New York Rapid Transit Corp.*, *supra*, 66 F.2d at 595, 19 U.S.P.Q. at 43.

In our view no rate higher than 10% is called for. As already indicated, plaintiff's profit in excess of 25% on its non-Government sales[12] does not mean that the royalty for the patents alone should equal or approach that figure which encompasses the gain on the whole item. Tektronix did not manufacture or sell the scopes here involved and is not entitled to a profit on their fabrication and vending.[13] For a comparable reason, it is not conclusive that non-

[12] As we have pointed out (see note 11), the trial judge thought Tektronix' profits could even rise to the 60% level if the volume was high enough, though plaintiff disputes that figure.

[13] Plaintiff would undoubtedly have insisted on, and would have made, an acceptable profit if there had been no patents or if the patents had expired. We have already held, *supra*, that plaintiff has failed to prove that it would necessarily have supplied the scopes if the defendant had limited its procurement to authorized manufacturers, or that it would have made the "lost profits" it now claims.

Government purchasers paid plaintiff prices which enabled it to make such profits on manufacture and sale of the scopes. In addition, royalty rates higher than 10%, though not unknown, seem to be relatively unusual, particularly in the electronics field.

Nor should it be forgotten, when plaintiff's high profits are brought forward for comparison, that the standard of 28 U.S.C. § 1498—"reasonable and entire compensation"—was designed "to accomplish complete justice as between the plaintiff and the United States" under the just compensation clause of the Fifth Amendment. *Waite v. United States*, 282 U.S. 508, 509 (1931). That goal of "complete justice" implies that only a reasonable, not an excessive, royalty should be allowed where the United States is the user—even though the patentee, as a monopolist, might be able to exact excessive gains from private users. Much of the content of the constitutional requirement of just compensationsation derives from the basic equitable principles of fairness as between the Government and its citizens. *See Almota Farmers Elevator & Warehouse Co. v. United States*, 409 U.S. 470, 478 (1973); *United States v. Fuller*, 409 U.S. 488, 490 (1973); *United States v. Commodities Trading Corp.*, 339 U.S. 121, 124 (1950). It is equally a fundamental component of fairness to avoid excessive compensation to the condemnee as it is to be sure not to pay him too little.

VI

With respect to the base to which the royalty is to be applied, it appears that the plug-ins are useless without the scopes and that the scopes require a plug-in before they have any utility. It also appears that the plug-ins are financially dependent on the market created by the patented scopes. Normally the patentee (or its licensee) can anticipate sale of such unpatented components as well as of the patented scopes. On these facts, there is sound authority for including the plug-ins in the base on which the royalties are calculated, even though the plug-ins are physically separate. *See e.g., American Safety Table Co. v. Schreiber*, 415 F.2d 373 (2d Cir. 1969), 163 U.S.P.Q. 129, *cert. denied*, 396 U.S. 1038 (1970); *Shearer v. United States*, 101 Ct. Cl. 196, 218, *cert. denied*, 323 U.S. 676 (1944). Plaintiff's patents were of such paramount importance that they substantially created the value of the plug-ins, and therefore the "entire market value rule" applies. *See Marconi Wireless Telegraph Co. v. United States*, 99 Ct. Cl. 1, 46–49, 53 U.S.P.Q. 246, 249–50 (1942), *modified on other grounds*, 320 U.S. 1 (1973).

The trial judge recognized this principle but ruled that the plug-ins should be included only in the base for the "commercial" scopes, not the "militarized" ones.[14] We see no valid basis for this distinction and cover the plug-ins into the base for both types of oscilloscopes. As did the trial judge, we exclude packaging and other miscellaneous costs which plaintiff sought to include at trial.

VII

Accepting the 10% rate set in Part V, *supra*, and the base-including-plug-ins, as discussed in Part VI, *supra*, we conclude that the royalty base for the "commercial" scopes is $9,740,385, and for "militarized" scopes it is $11,557,695. The total is $21,298,080. Applying the royalty rate of 10% to this base, we reach $2,129,808 as reasonable and entire compensation under 28 U.S.C. § 1498 (to which delay compensation must be added, *see* Part VIII, *infra*).[15]

VIII

As for the delay compensation which is a component of "reasonable and entire compensation" *(Waite v. United States, supra)*, the parties agree that it is appropriately computed at something more than the traditional 4% employed in the past. Both sides have presented evidence

[14] The only grounds he gave for the differentiation were "the royalty rate [which he had set at 27.5%], the magnitude of the procurement involved, and other factors present in this case." The royalty rate we fix (10%) is considerably lower than the trial judge's.

[15] Trial Judge Cooper's figure for reasonable and entire compensation (aside from delay compensation) was $4,831,773.

to support their varying theories. The trial judge, basing his determination on the yield of Aaa corporate bonds and actual Treasury securities, concluded that a separate rate should be set for each of the infringement years (1960–1969).[16] This rate was to be applied (at simple interest) to the royalties accruing in that year (at the beginning of the next year) and thereafter held constant to the date of payment.

Very recently in *Pitcairn, Agent v. United States*, No. 50328, decided Dec. 15, 1976, Part V of that opinion, we adopted a series of interest rates in a comparable patent suit under 28 U.S.C. § 1498, the rates to be applied each year, at simple interest, to the sums then owing to the plaintiff.[17] We hold that these rates should be applied (from now on) to just compensation cases, without need of proof in the individual instance, unless and until it is affirmatively demonstrated that under the theory of the *Pitcairn* opinion the rate for years after 1975 should differ from the 7½% rate set for 1971–1975. The old 4% rate[18] is now hopelessly antiquated and it is too burdensome to require parties to make specific proof in every case as to the appropriate interest rate. Until just the other day, the then current rate was mechanically used, without any evidence or proof that it was proper in the particular case.

[16] The trial judge recommended the following rates:

Year	Percentage
1960	4.60
1961	4.37
1962	4.45
1963	4.21
1964	4.37
1965	4.70
1966	4.74
1967	5.70
1968	6.20
1969	6.59

[17] The rates established in *Pitcairn* were:

1947–1955	4 4%
1956–1960	4–½%
1961–1965	4–¾%
1966–1970	6–½%
1971–1975	7–½%

[18] Beginning in 1944 the rate of 4% was automatically used until somewhat over a year ago.

We follow the same course. It will further the goal of equal justice, reduce the costs and complexity of litigation, and facilitate decision (as well as settlement) to accept and establish the *Pitcairn* rates and method, for the years through 1975, for all pending just compensation cases and those to be brought in the future.[19] Accordingly, in the present case we substitute the *Pitcairn* rates and method for the formula adopted by the trial judge.

Our conclusion is that plaintiff is entitled to recover $2,129,808 as the principal sum of its compensation under 28 U.S.C. § 1498, plus delay compensation. The amount of delay compensation will be determined (under Part VIII of this opinion) by the Trial Division under Rule 131(c).

BENNETT, *Judge*, concurring:

I join in the court's opinion but think it appropriate to add a few comments on the issue of delay compensation. The court today establishes for all future cases rates of simple interest for given periods to be awarded for delay in receipt of payment for property taken by the Government, as part of the just compensation mandated by the fifth amendment. *Seaboard Air Line Ry.* v. *United States*, 261 U.S. 299 (1923); *King* v. *United States*, 205 Ct. Cl. 512, 504 F. 2d 1138 (1974). In dissent Judge Skelton takes the court to task on its power to fix a rate of interest for delay compensation in cases not presently before it. Pointing to such enactments as the so-called Declaration of Taking Act, 40 U.S.C. § 258a (1970), Judge Skelton concludes that "[t]hese statutes demonstrate that if a fixed inflexible rate of interest is to be established in condemnation cases, it must be done by Congress and cannot be done by this court by way of judicial legislation." The dissent errs, I think, by failing to take into account the history of delay compensation law.

Though Congress has from time to time established by statute the rate of interest for delayed compensation in certain situations and geographic areas, the norm is for the court to be without explicit statutory guidance in setting

[19] Except where the parties stipulate otherwise or in other special cases, which we do not now pass upon, such as where Congress has established a different rate.

the interest rate. Early decisions of the Supreme Court in *United States* v. *North American Transp. & Trading Co.*, 253 U.S. 330 (1920), and *Seaboard Air Line Ry.* v. *United States, supra*, denied the availability of relief in the Court of Claims in inverse condemnation situations on a theory other than implied contract, thus ruling out the payment of delay compensation under the fifth amendment obtainable in district court eminent domain actions. By the late 1920's, however, this court was allowing interest in its judgments, as additional sums to compensate for delay in receipt of payment, in cases where the Government had expressly and clearly exercised its condemnation power. *Vandiver* v. *United States*, 67 Ct. Cl. 125 (1929) (taking of part of Aberdeen Proving Grounds); *Schroth* v. *United States*, 65 Ct. Cl. 49 (1928), 67 Ct. Cl. 382 (1929). In 1938, in a patent case referred by Congress, *Barlow* v. *United States*, the court observed, 87 Ct. Cl. 281, 286, that it was "unaware of any established precedent which fixes the rate of interest to be allowed in eminent domain cases as a part of just compensation," citing *Shoshone Indians* v. *United States*, 85 Ct. Cl. 331 (1937), *aff'd*, 304 U.S. 111 (1938). The court had stated in the latter case that the rate of interest allowed as part of just compensation is to be derived from the economic circumstances of the times intervening the taking and payment dates, as they affect the party whose property is taken:

> The field for investment by an Indian tribe was and is limited in the absence of an agreement to a deposit of the amount due the Indians in the Treasury of the United States and the payment thereon by the government of interest at the rate of 5 percent. The field for investment by citizens [sic] of funds received for property taken, and paid contemporaneously with the taking, is unlimited, and he is in a position and capable of taking full advantage of the local rate of interest. If, therefore, his money is not paid at the time of the taking, but later, the courts add to the value of his property at the time of taking an additional amount measured by interest, usually at 6 percent per annum, and, in some cases, a higher rate which he probably would have earned with his capital to the date of payment. * * *. [85 Ct. Cl. at 380.]

By 1946 it was clear that recovery on an inverse condemnation action brought in the Court of Claims could

be founded on the fifth amendment, *United States* v. *Causby*, 328 U.S. 256, ermitting the allowance of interest as part of the judgment for just compensation. *Fonalledas* v. *United States*, 123 Ct. Cl. 483, 107 F. Supp. 1019 (1952). Also in 1946, in an eminent domain case founded on a statute, this court repeated the *Barlow* observation that "there is no statute or rule fixing any particular rate [of delay compensation interest] to be allowed," confirmed that since the determination of fifth amendment compensation is exclusively a judicial function "it is for the Court to fix upon the rate it will allow," and noted that the allowance of a "uniform rate does in fact avoid discrimination among litigants," a discrimination that presumably would be present if the interest rate allowed depended upon the state of proof or the legal rate in the plaintiff's locality. *Arkansas Valley Ry.* v. *United States*, 107 Ct. Cl. 240, 259, 68 F. Supp. 727, 730 (1946), *cert. denied*, 330 U.S. 811 (1947). Thereafter, in a case citing *Arkansas Valley Ry.*, the court rejected proposed variations in the rate of just compensation interest used in a large number of previous taking cases, noting the lack of a controlling statute or rule but asserting the prudence of uniformity. *Carlstrom* v. *United States*, 147 Ct. Cl. 297, 306, 177 F. Supp. 245, 250 (1959). Later opinions adhered to these thoughts. *Confederated Salish & Kootenai Tribes* v. *United States*, 193 Ct. Cl. 801, 825–26, 437 F. 2d 458, 472 (1971); *Drakes Bay Land Co.* v. *United States*, 198 Ct. Cl. 506, 520–21, 459 F. 2d 504, 511–12 (1972).

Not until *King* v. *United States, supra*, did the court approve a variance from the then standard 4-percent rate. The difference in *King* was that the parties stipulated to the use of interest rates more nearly akin to long-term Government bond interest rates paid during the period of delay in compensation. In *Pitcairn* v. *United States*, Ct. Cl. No. 50328, 212 Ct. Cl. ___ (Dec. 15, 1976), investment return rates found as facts by the trial judge were employed to measure the plaintiff's delay compensation due. However, the use of neither the stipulation nor the fact-finding to adjust the interest rate, during a period when the prevailing market rate obviously had jumped to a higher plateau than was true in the preceding several

decades since the Great Depression, precluded the court from "fix[ing] upon the rate it will allow" and keeping this rate "uniform" over a given period of time. *Arkansas Valley Ry.* v. *United States, supra.*

A brief review of selected cases from this court since the demise of the "implied contract" theory of inverse condemnation reveals that the constitutionally appropriate rate of delay compensation interest has been periodically ascertained by the court and then held constant over a span of time. Moreover, this has occurred quite without the direction of the statute that the dissent thinks necessary. For non-Indian claims, which *Shoshone Indians* v. *United States, supra,* sets apart from Indian claims, the court allowed 6 percent from taking dates in 1917 and 1918, respectively, in *Vandiver* v. *United States, supra,* and *Schroth* v. *United States, supra.* A 5-percent rate was allowed in several cases whose taking dates preceded the foregoing, but whose judgments came down substantially after the cases. *Marconi Wireless Tel. Co.* v. *United States,* 99 Ct. Cl. 1 (1942), *rev'd in part on other grounds,* 320 U.S. 1 (1943) (taking dates ranged from 1911 to 1919); *National Elec. Signaling Co.* v. *United States,* 99 Ct. Cl. 621 and 646, 49 F. Supp. 754 and 768 (1943) (two cases—taking dates of 1918 and 1914, respectively). The rate in *Barlow* v. *United States, supra,* the taking in which occurred in 1919, was also fixed at 5 percent. Then, with the advent of the Great Depression, the general market rate diminished somewhat, and so did the delay compensation rate allowed. In *Willow River Power Co.* v. *United States,* 101 Ct. Cl. 222 (1944), *rev'd on other grounds,* 324 U.S. 499 (1945), the rate was set at 4.5 percent from the taking date in 1938 to the date of payment. Thereafter, the 4-percent rate became entrenched in the case law, and came to be applied almost automatically until the *King* decision. *See Atwater* v. *United States,* 106 Ct. Cl. 196 (1946) (taking in 1941); *Schaffer* v. *United States,* 104 Ct. Cl. 229, 60 F. Supp. 760 (1945) (wartime property requisition, 1942); *Arkansas Valley Ry.* v. *United States, supra; Turney* v. *United States,* 126 Ct. Cl. 202, 115 F. Supp. 457 (1953) (taking in 1947); *Miller* v. *United States,* 135 Ct. Cl. 1, 140 F. Supp. 789

(1956) (1948 seizure of airplanes for security reasons); *Carlstrom* v. *United States, supra; A.J. Hodges Indus., Inc.* v. *United States,* 174 Ct. Cl. 259, 355 F. 2d 592 (1966) (avigation easement, 1958); *Drakes Bay Land Co.* v. *United States, supra.* For Indian taking claims, 5 percent was generally allowed until 1934, when the rate changed to 4 percent. *Shoshone Indians* v. *United States, supra* (5 percent allowed from 1878 to date of payment, judgment in 1937); *Uintah & White River Bands of Ute Indians* v. *United States,* 139 Ct. Cl. 1, 11–12, 152 F. Supp. 953, 958 (1957) (5 percent from 1905 to 1934, 4 percent thereafter); *Confederated Salish & Kootenai Tribes* v. *United States, supra* (5 percent from 1912, 4 percent from 1934).

As I think the foregoing demonstrates, the court's exercise of its power today in fixing past period interest rates for future cases is neither extraordinary, without historical foundation, nor ill advised. The *Arkansas Valley Ry.* rationale of avoiding discrimination among diverse taking claimants is as valid today as it was when first stated. Today's decision will place less of a burden on the litigating parties and the court, by exercise of power well grounded in the court's past, and yet take account of financial market realities too long ignored in the eminent domain, inverse condemnation, and patent decisions of this and other courts. For these reasons, I concur in the court's opinion.

SKELTON, *Judge,* concurring in part and dissenting in part:

I agree with all of the majority opinion in this case except that part of it that deals with delayed compensation. The court adopts the rates of interest awarded in *Pitcairn* v. *United States,* Ct. Cl. No. 50328 (decided December 15, 1976), and holds that such rates should be applied from now on, without any proof, in just compensation cases. The effect of this holding will require this court to award seven and one-half percent interest in all condemnation cases during the period 1971 to 1975, and in all pending and

future condemnation cases, without any proof of the proper interest rate.

In my opinion, this court is without authority to make any such rule because it amounts to legislation that can only be enacted by Congress.

In the past, Congress has fixed interest rates in condemnation cases. See 16 U.S.C. § 79c(b)(2) (1970) wherein Congress provided for the payment of six percent interest for the taking of any property by the United States in the Redwood National Park of California. Also in the Declaration of Taking Act, 40 U.S.C. § 258a (1970), 46 Stat. 1421, Congress specified that six percent would be paid as a part of just compensation for a taking of land by the United States. These statutes demonstrate that if a fixed inflexible rate of interest is to be established in condemnation cases, it must be done by Congress and cannot be done by this court by way of judicial legislation.

Furthermore, the majority decision in the instant case is in direct conflict with the decision of the Ninth Circuit Court of Appeals in *United States* v. *Blankinship*, 543 F.2d. 1272 (1976), wherein that court held that the proper rate of interest in a condemnation case should be the same as a direct obligation of the United States Treasury having a duration approximating the period during which the deficiency was unpaid (i.e., long term Government obligations).[1] This procedure has not been followed by the majority in the instant case. It is true the trial judge considered the yield of Treasury securities and also the yield of AAA corporate bonds, but it is not shown whether the Treasury securities were of short or long term duration, nor which type of security was relied on by the trial judge. In any event, the majority rejected the interest allowance of the trial judge in its entirety and substituted its own interest rates without any proof to support them.

Also, the trial judge arrived at an interest rate for the year in which each taking occurred and held that it must remain constant until paid. This was correct as a matter of principle, but the majority changed the rate every five or

[1] See my dissent in *Pitcairn* v. *United States*, *supra*.

six years. This is contrary to interest payments on long term Government securities where the interest rate remains constant until maturity of the securities. It is impossible to change the interest rate on long term Government obligations every few years if the interest rates in the financial world fluctuate up and down.

I would remand this part of the case to the trial judge with instructions to fix the interest rate for the periods in question according to the yield of Government obligations with duration approximating the periods of time from the date of each taking until paid, and that once the interest rate was determined for each taking, it would remain constant until paid.

KASHIWA, *Judge*, concurring in part and dissenting in part:

I do not agree with the 10 percent royalty rate used by the majority. I also believe that the methodology used by the majority to arrive at that rate is not proper. Rather, it is my opinion that the graduated rate recommended by the Government is the proper rate.

This court has held that where the patentee has by agreement established a royalty rate, that established rate is the measure of reasonable and entire compensation under 28 U.S.C. § 1498 (1970). In *Calhoun* v. *United States*, 197 Ct. Cl. 41, 55–56, 453 F. 2d 1385, 1393–1394 (1972), this court held as follows:

> A. Claimants prefer to have compensation fixed by the Government's cost-savings attributable to the invention; this has been found to be about $0.73 for each use. We agree, however, with the commissioner that while this court has, at times, looked to cost savings in determining compensation (*Shearer* v. *United States*, 101 Ct. Cl. 196, 60 USPQ 414, *cert. denied*, 323 U. S. 676 (1944); *Olsson* v. *United States*, 87 Ct. Cl. 642, 25 F. Supp. 495, 37 USPQ 767 (1938), *cert. denied*, 307 U. S. 621 (1939)), *it has used a reasonable royalty as the basis in all cases where the evidence established a royalty rate used by the patentee in commercial licensing.* * * * Here, the evidence shows that, starting in the 1940's Christensen licensed the

patent throughout the industry at a royalty of 0.25 cent for each O-ring used in an infringing structure. Furthermore, Christensen filed in the U. S. Patent Office in 1947, for announcement to the public, a form of license by which he offered to license the patent to anyone at a royalty of 0.25 cent per "packing construction." Many licenses were so granted; and between 1946 and 1956, Christensen and his successors were paid royalties by commercial users at the rate of 0.25 cent per O-ring for 261,938,168 infringing structures. See *Calhoun* v. *State Chem. Mfg. Co.*, 153 F. Supp. 293, 115 USPQ 120 (N.D. Ohio 1957). *Thus, the patentee established a royalty which he deemed to be appropriate for use of the invention; and that royalty should form the basis for determining the compensation due plaintiffs.* [Citations omitted; emphasis supplied.]

See also *Carley Life Float Co.* v. *United States*, 74 Ct. Cl. 682 (1932); *Saulnier* v. *United States*, 161 Ct. Cl. 223, 314 F. 2d 950 (1963); *Badowski* v. *United States*, 150 Ct. Cl. 482, 278 F. 2d 934 (1960); *Pitcairn* v. *United States*, Ct. Cl. No. 50328 (decided December 15, 1976). For convenience the above rule will be hereinafter referred to as the *Calhoun* rule. The rationale behind the rule is that where the patent owner voluntarily grants a license for consideration, it is only logical to conclude that he considers the consideration to be reasonable. It is a simple and just rule.

The *Calhoun* rule is also easy to apply. So in this case if it is shown that plaintiff, the patent owner, granted a license or licenses to others for consideration within the time frame relevant to this case, the royalty rate so established must be used to compute reasonable and entire compensation under 28 U.S.C. § 1498. Proof that plaintiff voluntarily granted three such licenses in this case is not only uncontradicted but admitted by plaintiff. Unfortunately, there has been a misinterpretation of the effect of the licenses because the label "royalty free cross license" is used to describe these licenses. I refer to portions of the majority opinion wherein these misinterpretations are apparent. The majority in the first sentence of Part II in its opinion states:

> The parties are in agreement that plaintiff *has no established licensing program or royalty applicable* to the

> patents in this accounting. [Footnote omitted; emphasis supplied.]

The majority reiterates what the trial judge states in his opinion. However, I believe the majority's amendment to the trial judge's Findings of Fact 5 to be inconsistent with this statement. The majority's change to Findings of Fact 5 is as follows:

> 2. In finding 5, insert the following after the first sentence: "However, the plaintiff granted to the Western Electric Company and RCA a *royalty-free license* in its patents in return for a license in certain groups of patents of those firms. Plaintiff also licensed the Hewlett-Packard Company, a major competitor, with a *royalty-free cross-license* in all patents of each firm." [Emphasis supplied.]

By cross licenses plaintiff granted RCA, Western Electric and Hewlett-Packard the right to use plaintiff's patents in return for plaintiff's right to use their patents. The quid pro quo was the license each company exchanged. Therefore, if the licenses granted to plaintiff can be valued, their respective values, in turn, would establish the royalty value of plaintiff's license herein issue. This court must then, under the *Calhoun* rule, use the established rate to compute reasonable and entire compensation. In analyzing the cross license arrangement between plaintiff and RCA, Mr. Glassman, the expert Government witness, succinctly phrased it:

> • • • under the royalty-free cross license, which included a royalty-free license to RCA under the Plaintiff's oscilloscope patents, RCA was giving up in return the opportunity to receive an effective royalty of 1.375 percent from the Plaintiff, and the Plaintiff was therefore in effect licensing RCA at an effective royalty rate of 1.375 percent of the Plaintiff's own sales. [Tr. 3876.]

In other words, in a royalty free cross license consideration passes between the parties. If the consideration is reduced to monetary terms, the established royalty of plaintiff's license to RCA, Western Electric or Hewlett-Packard may be effectively determined.

Plaintiff, by entering into cross license agreements with RCA, Western Electric and Hewlett-Packard, evaluated its own license; that value should now bind the plaintiff in the instant reasonable and entire compensation determination. Plaintiff's contracts with RCA, Western Electric and Hewlett-Packard should bind plaintiff as the .25 cent per O-ring license bound the patent owner in *Calhoun* and the 2 percent United license bound the patent owner in *Pitcairn, supra*. In *Pitcairn* this court decided the effective royalty rate under aircraft patents there in issue mainly on the 2 percent United agreement voluntarily entered into by plaintiff-patent owner in that case. The court focused upon the United 2 percent agreement even though it was the only reliable agreement outstanding. This court held as follows:

> It is a truism that patents can change or decline in value, and that seems to have been the case for Autogiro, even in its own eyes, during the post-war years. It wanted a package deal for any and all of its patents, and some of these were expiring from time to time. Engineering data for autogiros (manufactured in the pre-war era) were not useful for helicopters (the article made after the war). The post-war procurement of devices using plaintiff's inventions was bound to be very much larger than the pre-war purchases—and the royalty *rates* could therefore decline significantly. Nor is it a sign of invalidating compromise that, especially where a packet of patents is involved, there may have been some doubts as to the validity of some of the claims. Autogiro probably had some of those doubts itself and adjusted its demands accordingly. *For these reasons the 2% United agreement seems to us highly probative under the rule we reiterated in Calhoun v. United States, 197 Ct. Cl. 41, 55–57, 453 F. 2d 1385, 1393–94 (1972). Calhoun* teaches that the mere surmise that a bargained license may possibly include some discount for litigation-avoidance does not *per se* preclude use of an accepted commercial rate as establishing reasonable and entire compensation. *Earlier, Saulnier v. United States, 161 Ct. Cl. 223, 314 F. 2d 950 (1963), took heavy account, in setting compensation, of the plaintiff's previous settlement of infringement claims against the British government where that settlement appeared to be satisfactory and reasonable. See 161 Ct. Cl. at 226–27, 314 F. 2d at 951–52.* [Footnote omitted; emphasis supplied.] [Slip op. at 12–13.]

In the instant case, there are three royalty agreements outstanding, but the majority elects to perfunctorily dismiss them as not relevant. They did not even refer to the *Calhoun* rule in summarily avoiding the three cross licenses. However, the Government's expert witness, Mr. Glassman, used these three cross licenses and testified that in his opinion the royalty rate in this case should be as follows:

1.5 percent on the first $2 million,
1.2 percent on the next $3 million, and
1 percent on the remainder.

The majority rejected Mr. Glassman's rates. It appears that the majority in taking that position did not seriously consider the three cross licenses by plaintiff with RCA, Western Electric and Hewlett-Packard, apparently because these licenses were labeled royalty free cross licenses. The following reasoning given by the majority at p. 10 bears this out:

> The Government's proposal is rejected because the evidence on which it is premised is *not at all analogous* to the facts here. Defendant relies on the licensing programs of RCA and Western Electric but it seems clear that plaintiff—*which was not a company comparable in size to those corporate giants, nor possessed of either a comparable patent portfolio or a comparable product line, nor under the spur of an anti-trust decree—should not be governed by the same considerations.* Items such as transistors, tubes, and similar electronic components are *comparatively simple in structure, have a relatively low per-unit cost, and are sold and used in very large quantities.* Plaintiff's oscilloscopes, on the other hand, are much more complex, have a much higher per-unit cost, and the quantities sold are much lower. [Footnote omitted; emphasis supplied.]

The majority intimates that the percentages presented by the Government have no relevance to plaintiff's oscilloscope patents. But as shown below, the three cross licenses were tied into plaintiff's oscilloscope patents by the testimony of defendant's expert witness. Furthermore, the

majority's reference to the irrelevancy of transistor tubes in this litigation shows that the majority did not consider the portion of the record in this case in which the defendant's expert witness analyzed the transistor license values; transistor values were tied into plaintiff's license of its oscilloscope patents by the cross licenses. Nevertheless, corporate sizes, patent portfolio sizes, anti-trust decrees, simplicities of transistors, volumes of sales and complexities of oscilloscopes are all of no relevance under the *Calhoun* rule where it is shown that plaintiff by its three cross license agreements established a royalty for its patents.

Mr. Glassman showed that from 1953 up to September 1, 1957, plaintiff was a licensee under RCA's licenses which covered measuring and testing devices (Tr. 3812). Licenses for measuring and testing devices included patents on oscillographs. Plaintiff actually paid RCA royalties for these RCA licenses from 1953 to 1957; this was shown by royalty reports made by plaintiff to RCA. (Defendant's Ex. DA-31E, F and G.) The royalty plaintiff paid RCA in said years was based on 1.5 percent for commercial units but 1 percent for Government sales (see Ex. DA-31D). On September 1, 1957, plaintiff and RCA entered into a cross licensing agreement (Ex. DA-31D) (Tr. 3874). Mr. Glassman considered the prior payments to RCA by plaintiff to establish the reasonable royalty value of plaintiff's patents under the cross license.

As for the plaintiff-Western Electric cross license, Mr. Glassman showed that Western Electric owned patents on transistors which plaintiff used in the manufacture of its oscillographs. Plaintiff found the use of these patents necessary. Western's patents on the transistors were licensed to plaintiff by Western Electric. The rates on these one-way Western Electric to plaintiff transistor licenses were high; so plaintiff negotiated a lower, 1.5 percent, rate in exchange for royalty free use of plaintiff's patents by Western. This was the Western Electric-plaintiff cross license (Tr. 262, 264, 270). Defendant's witness also used the value of royalties on the transistor patents owned by

Western Electric to establish the values of royalties on plaintiff's patents in issue in this case.

No one questioned Mr. Glassman's expertise in the field of royalty rates on patents, especially in the electronics field. His testimony covered 219 pages (Tr. 3773 to 3992). In *Pitcairn, supra,* his qualifications are fully listed at slip op. 47. I do not think it necessary to repeat his qualifications. In the instant case, Mr. Glassman testified that in establishing his graduated royalty rate, starting with 1.5 percent, he considered eight elements which I list in the margin.[1]

I feel that the majority, when they rejected the above-quoted rates suggested by the Government, were overly influenced by plaintiff's profits. They stated at p. 10:

> * * * Moreover, the evidence is that during the 1960's, plaintiff was realizing on its commercial sales an average profit of 23.7% on the 535 scope and 27.7% on the 545 scope, those figures reflecting plaintiff's margin on these products after both direct and indirect costs had been considered. In view of those figures, defendant's suggestion that plaintiff should be forced to accept a declining royalty starting at 1½% for its inventions could not, without the greatest difficulty, be accepted as just compensation for use of the patents.

The majority's view above expressed conflicts with *Mitchell* v. *United States,* 267 U. S. 341 (1925), the leading case in the federal law of eminent domain on the subject whether business profits may be used as evidence in an

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[1] Mr. Glassman based his testimony on eight criteria:

"Yes. I believe that there are eight pertinent criteria to be used here in determining a reasonable royalty. The first one is the degree of importance, or the advance over the prior art, to put it a little differently, of the patents on which the compensation is to be based.

"Second, the total volume of infringing procurement. Third, the portion of the device which utilizes the patents held valid and infringed. Fourth, whether the royalty base is to be the entire device or only a portion of it. Fifth, the features of the device or related items, such as accessories and data, whose costs are to be deducted in arriving at the royalty base. Sixth, the Court of Claims decisions, and to a lesser extent the decisions of other Federal Courts, on the determination of reasonable royalty rates. Seventh, any licenses which were granted by the Plaintiff under the patents before the filing of the suit. And finally, eight, typical license agreements on electronic testing and measuring apparatus under patents of other companies." [Tr. 3843-3844.]

eminent domain proceeding to determine reasonable compensation. In *Mitchell* v. *United States*, *supra*, at 345, the Court held:

> • • • The settled rules of law, however, precluded his considering in that determination consequential damages for losses to their business, or for its destruction. *Joslin Manufacturing Co.* v. *Providence*, 262 U. S. 668, 675. Compare *Sharp* v. *United States*, 191 U. S. 341; *Campbell* v. *United States*, 266 U. S. 368. No recovery therefor can be had now as for a taking of the business. There is no finding as a fact that the Government took the business, or that what it did was intended as a taking. If the business was destroyed, the destruction was an unintended incident of the taking of land. There can be no recovery under the Tucker Act if the intention to take is lacking, *Tempel* v. *United States*, 248 U. S. 121. Moreover, the Act did not confer authority to take a business. In the absence of authority, even an intentional taking cannot support an action for compensation under the Tucker Act. *United States* v. *North American Co.*, 253 U. S. 330.

Mitchell has been followed for 52 years[2] as the federal law of eminent domain: excluding business profits of the condemnee owner to prove reasonable value of the condemned property. The majority argues that *Almota Farmers Elevator & Warehouse Co.* v. *United States*, 409 U. S. 470 (1973), stands for the broad proposition that "basic equitable principles of fairness are the governing consideration in determining just compensation for an eminent domain taking" but I do not think that it permits departure from the *Mitchell* rule. In *Almota* in footnotes 2 and 3, at pages 475–476, the majority Justices of the Court remind the dissenting Justices that *Almota* "is not a case where the petitioner is seeking compensation for lost opportunities." The majority of the Court in *Almota* does not overrule *Mitchell*; rather, it assures the dissenting Justices in footnote 2 that *Mitchell* is still the federal law of eminent domain. Applying the *Mitchell* rule to the

[2] See *United States ex rel. T.V.A.* v. *Powelson*, 319 U. S. 266 (1943); *Bothwell* v. *United States*, 254 U. S. 231 (1920). *See also Omnia Commercial Co.* v. *United States*, 261 U. S. 502 (1923); *Price Fire & Water Proofing Co.* v. *United States*, 261 U. S. 179 (1923); *United States* v. *Honolulu Plantation Co.*, 182 F. 2d 172 (9th Cir.), cert. denied, 340 U. S. 820 (1950); 4 *Nichols, Eminent Domain* (3d ed. rev. 1976), § 12.3121[1], [2].

present case, defendant did not take plaintiff's business. Defendant took only a nonexclusive license under plaintiff's patents in issue in this case. It was highly improper for the majority to refer to plaintiff's percentage of profit.

In 4 *Nichols, Eminent Domain* (3d ed. rev. 1976), § 12.3121, relating to Profits as criteria of value, it is stated:

> [1] Past profits.
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> If the owner of property uses it himself for commercial purposes, the amount of profits from the business conducted upon the property depends so much upon the capital employed and the fortune, skill and good management with which the business is conducted, that it furnishes no test of the value of the property. It is, accordingly, well settled that evidence of the profits of a business conducted upon land taken for the public use is not admissible in proceedings for the determination of the compensation which the owner of the land shall receive. • • • [Footnote omitted.]
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> [2] Future profits.
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> The admission of evidence as to anticipated future profits is objectionable, not only upon the grounds stated with respect to past profits, but also on the further ground that such profits are necessarily conjectural. Future profits depend on so many contingencies that an accurate valuation cannot be based thereon. Experience and observation both show that paper future profits are more often illusory than real. [Footnote omitted.]
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> • • • • •
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> [3] Capitalization of hypothetical income.
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> The capitalization of hypothetical income method of valuation has generally been rejected by the courts. In *Matter of City of New York (Blackwell's Island Bridge)*, a leading decision in this area, the court said:
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> "In regard to the vacant lots, parcel No. 31, a witness was asked what would be the best use to which these lots could be put; he replied: The erection of 'three apartment houses, • • • making each building about 33 feet'. He was then allowed to testify, over objections and exceptions, that the cost of constructing three such buildings would be $75,000, and that the rental value of such buildings would be between $14,000 and $15,000 a year. This was clear error. It involved so much of the elements

of uncertainty and speculation as to be inadmissible as proof of any fact. * * *" [Footnote omitted.]

In view of the *Calhoun* rule, it may not be necessary to discuss plaintiff's hypothetical profit computation using Hickok as the hypothetical licensee. Nevertheless, I make the following interesting observations. The hypothetical method used by the majority was adopted from the approach in *Georgia-Pacific Corp.* v. *United States Plywood Corp.*, 318 F. Supp. 1116 (S.D. N.Y. 1970), *aff'd*, 446 F. 2d 295 (2d Cir.), *cert. denied*, 404 U. S. 870 (1971). The district court clearly stated that the hypothetical method may be employed only where there is no established royalty, citing a Supreme Court case for support. The district court held at 1121:

> The parties agree that there was no "established" royalty for USP's Weldtex or GP striated. Consequently, it is necessary to resort to a broad spectrum of other evidentiary facts probative of a "reasonable" royalty.
>
> Two of the earlier and typical cases relied upon by both parties are Dowagiac Mfg. Co. v. Minnesota Moline Plow Co., 235 U. S. 641, 35 S. Ct. 221, 59 L. Ed. 398 (1915) and United States Frumentum Co. v. Lauhoff, 216 F. 610 (6th Cir. 1914). In Dowagiac Mfg. Co. *supra*, 235 U. S. at 648, 35 S. Ct. at 224, the Supreme Court said that, where a patentee could not prove lost profits, infringer's profits or *an established royalty*, the patentee could "show the value by proving what would have been a reasonable royalty, considering the nature of the invention, its utility and advantages, and the extent of the use involved." * * * [Emphasis supplied.]

In *Dowagiac Manufacturing Co.* v. *Minnesota Moline Plow Co.* 235 U. S. 641, 648 (1915), the Court stated:

> * * * So, *had the plaintiff pursued a course of granting licenses to others to deal in articles embodying the invention, the established royalty could have been proved as indicative of the value of what was taken*, and therefore as affording a basis for measuring the damages. *Philip* v. *Nock*, 17 Wall. 460, 462; *Birdsall* v. *Coolidge*, 93 U. S. 64, 70; *Clark* v. *Wooster*, 119 U. S. 322, 326; *Tilghman* v. *Proctor*, 125 U. S. 136, 143. But, as the patent had been kept a close monopoly, *there was no established royalty. In that situation it was permissible to show the value by proving what would have been a*

> *reasonably royalty, considering the nature of the invention, its utility and advantages, and the extent of the use involved.* * * *

Therefore, even *Georgia-Pacific* does not permit using the hypothetical Hickok profit analysis approach where there is an established royalty shown, as in this case, by plaintiff's three cross licenses. I am also of the opinion that the hypothetical Hickok profit approach used by the majority cannot be used because it is a departure from the federal law of eminent domain. Hickok was an infringer but unlike defendant it was a non-Governmental infringer subject to damages only under 35 U.S.C. § 284 (1970). The history of the use of an infringer's profits to determine a patent owner's damages under 35 U.S.C. § 284 has been a stormy one.[3] There still remains the question as to what Congress intended when it eliminated infringer's profits in 1946 from section 284. It was thought that *Aro Manufacturing Co.* v. *Convertible Top Replacement Co.*, 365 U. S. 336 (1961), resolved the ambiguity but *Georgia-Pacific* was one of the first cases to hold that *Aro* did not eliminate use of infringer's profits to compute reasonable royalty by means of a "willing buyer-willing seller" hypothetical negotiation. See a discussion of this 1946 change in 3 *White, Patent Litigation: Procedure & Tactics* (1976), § 9.01[2]. White, at page 9–34, warns that use of the infringer's profits under the *Georgia-Pacific* approach has resulted in "unusually high" awards in comparison to older cases. He also warns, at pages 9–24 to 9–25, that this infringer's profit approach

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[3] See *Hearings on H.R. 5231* (later reported as H.R. 5311) *Before the House Comm. on Patents*, 79th Cong., 2d Sess. 2–3 (1946) (remarks of Rep. Henry explaining the prime reason for the elimination of infringer's profits):

"Now, however, by far the greater number of patents that are in litigation are on special and often relatively insignificant parts of complex structures to which the patented feature is so related that it is absolutely impossible to apportion the profits due to the invention, those being the only profits to which the patentee is entitled.

"The result is that there is a complete failure of justice in almost every case in which supposed profits are recovered or recoverable.

"Absolutely artificial and unsound rules have been invented to solve the impossible problem of how to apportion profits."

Portions of the hearing, including the above quotation and other pertinent information, are quoted at length in footnotes in *Georgia-Pacific Corp.* v. *United States Plywood Corp.*, 243 F. Supp. 500, 521–527 (S.D. N.Y. 1965).

may again raise questions of allocation or apportionment of infringer's profits under *Dowagiac Manufacturing Co.* v. *Minnesota Moline Plow Co., supra,* and *Westinghouse Elec. and Mfg. Co.* v. *Wagner Elec. and Mfg. Co.*, 225 U. S. 604 (1912), and the "entire market" doctrine. White definitely tags the hypothetical approach in *Georgia-Pacific* as an anticipated profit approach. At page 9–33 he states:

> Although the concept of the infringer's profits does become involved in determining a reasonable royalty, it should be observed that the point of interest is not the profit which actually was realized but that which was anticipated. The *Georgia-Pacific* case illustrates the point, for G–P apparently contended that the market for the products involved in the suit, and presumably their profitability, decreased during the period of infringement. The court, however, emphasized the situation at the time the reasonable royalty would have been negotiated, and relied on the anticipated profits rather than those actually realized. [Footnotes omitted.]

I submit that since in *Georgia-Pacific* damages were assessed under 35 U.S.C. § 284, the limitations in establishing market value under the federal law of eminent domain were not considered. As shown above, the *Mitchell* rule which prescribes the use of profits as a measure of damages also limits use by this court of the hypothetical Hickok profit approach. The majority's sole statutory authority for allowing plaintiff compensation is 28 U.S.C. § 1498, under the federal law of eminent domain. Therefore, *Mitchell* applies and prevents such a hypothetical profit approach.[4]

[4] The majority in its footnote 7 states that:

"This willing-buyer/willing-seller technique in determining a reasonable royalty has not been a stranger to the Court of Claims. *Olsson* v. *United States, supra; Badowski* v. *United States*, 150 Ct. Cl. 482, 485, 278 F. 2d 934 (1960); *Ushakoff* v. *United States*, 179 Ct. Cl. 780, 785–86, 375 F. 2d 822, 825, 153 U.S.P.Q. 410 (1967); *Amerace Esna Corp.* v. *United States*, 199 Ct. Cl. 175, 462 F. 2d 1377, 174 U.S.P.Q. 517 (1972). For cases from other courts, *see, e.g., Jenn-Air Corp.* v. *Penn Ventilator Co.*, 394 F. Supp. 665, 185 U.S.P.Q. 410 (E.D. Pa. 1975)."

None of the Court of Claims cases uses the infringer's profit hypothetical approach. *Olsson* uses the willing buyer-willing seller approach using Government savings as a basis. In *Badowski* the willing buyer-willing seller approach was used using prior commercial licenses granted by the patent owner as a basis. In *Ushakoff* the willing buyer-willing seller approach was implemented using prior commercial licenses as a basis. *Amerace Esna Corp.* uses the willing buyer-willing seller approach using cost savings to defendant as a basis. *Jenn-Air Corp.* uses the willing buyer-willing seller approach but it was a damage determination under 35 U.S.C. § 284 and a suit between private parties; the federal rules of eminent domain are not applicable in such cases.

In addition, the following "apportionment rule" prevents the use of the Hickok hypothetical profit approach. In *Westinghouse Elec. and Mfg. Co.* v. *Wagner Elec. and Mfg. Co., supra,* involving an electrical converter to promote the efficiency of transformers, the Court stated at 614–615:

> (d) But there are many cases in which the plaintiff's patent is only a part of the machine and creates only a part of the profits. His invention may have been used in combination with valuable improvements made, or other patents appropriated by the infringer, and each may have jointly, but unequally, contributed to the profits. In such case, if plaintiff's patent only created a part of the profits, he is only entitled to recover that part of the net gains. He must, therefore, "give evidence tending to separate or apportion the defendant's profits and the patentee's damages between the patented feature and the unpatented features, and such evidence must be reliable and tangible, and not conjectural or speculative; or he must show, by equally reliable and satisfactory evidence, that the profits and damages are to be calculated on the whole machine, for the reason that the entire value of the whole machine, as a marketable article, is properly and legally attributable to the patented feature." *Garretson* v. *Clark*, 111 U. S. 120.

The Government's expert witnesses described plaintiff's patent as only an improvement patent (Tr. 3863) and plaintiff's own witnesses deposed that plaintiff's patents were improvement patents. Oscillographs were in use prior to and during World War II, before plaintiff's patents were ever in the picture. In fact, Jetronic Industries, Inc. was already in the business of manufacturing oscillographs before plaintiff's improvement patents were obtained. The war itself generated a tremendous amount of basic research in electronic circuitry, much of it financed under wartime Government contracts. Much of this basic work, performed at Radiation Laboratory at the Massachusetts Institute of Technology, related to the wartime need for improved radar and fire control systems. This pioneering work generated a large postwar spinoff in the form of a growing civilian electronics industry. Some of this basic

work at the Massachusetts Institute of Technology Radiation Laboratory produced two basic oscilloscope patents to Chance and Washburn owned by the Government, which have previously been the subject of controversy in this case. *Tektronix, Inc.* v. *United States*, 173 Ct. Cl. 281, 351 F. 2d 630 (1965) [DA3–44, DA3–47, DA3–21A, DA3–21B]. These patents are fundamental to the accused oscilloscopes and are cited as prior art references in many of the patents in suit [DA3–34, DA3–35, DA3–45, DA3–46, DA3–48, DA3–49, see deposition of Gunnar P. Ohman, DA3]. In this environment of radically changing technology during a period of tremendous growth for the entire electronics field, the plaintiff corporation was founded by Howard Vollum in 1946 specifically to design and ultimately to manufacture improved oscilloscopes. *Tektronix, Inc.* v. *United States*, 188 USPQ 25, 27 (Ct. Cl. Tr. Div., 1975); Finding 3. It is undisputed that during the period from 1946 to 1954, the plaintiff developed several improved circuits which, taken together, produced a technically advanced oscilloscope. *Id.* However, it is also clear that much of this improved circuitry was based on the Government's wartime research work which had been generally made available to the public at large [DA3–46, DA3–49, see generally DA3].

In the second *Georgia-Pacific* district court decision, reported in 318 F. Supp. 1116, the court held at 1132:

> [6] This case does not permit application of the principle of apportionment inasmuch as the Deskey patent was not one for an improvement on an article nor was GP's infringement of a patented feature sold together with unpatented parts. Decisions illustrating the rule applicable to patented improvements or to patented parts of articles also embodying unpatented parts are not apposite for the reason that the Deskey patent covered and Weldtex represented a marketable article—a panel of striated fir plywood—as an entirety.
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> * * * * *
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> In terms of a structural test, for example, the contribution of the Deskey invention cannot be isolated as a separate physical part. The invention permeated the plywood panel to such a degree that it should be considered as covering the article as a whole. In this situation, the invention was not only for an improvement.

The article involved in *Georgia-Pacific* was plywood so it could be said that the invention "permeated" the plywood panel, but the present case is like the transformer improvement patent in *Westinghouse Elec. and Mfg. Co.* v. *Wagner Elec. and Mfg. Co.*, *supra*, where the Court recognized that electrical equipment is fundamentally made of many parts. The majority revived the much-feared problem of allocation of infringer's profit, which Congress attempted to eliminate (see *supra*, footnote 3). The Chance patent and the Washburn patent owned by the Government were recited as prior art in the patents involved in the present case, and the said Government-owned patents were fundamental to the accused oscilloscopes. The mere fact that in *Tektronix, Inc.* v. *United States*, 173 Ct. Cl. 281, this court held that these two Government patents were not subject to counterclaim damages by the Government does not mean that under the *Westinghouse Elec. and Mfg. Co.* apportionment rule, this court need not apportion values attributable to the Chance and Washburn patents in computing eminent domain compensation under 28 U.S.C. § 1498. I believe that *United States* v. *Fuller*, 409 U. S. 488 (1973), is a leading eminent domain case for the proposition that the Government in a condemnation case may not be required to compensate a condemnee for elements of value that the Government has created. In *Fuller* the alleged added value was by 31,461 acres of Government-owned grazing lands adjacent to the condemnee's ranch property of 1,280 acres owned in fee simple by the condemnee. In *Fuller*, at pages 492–493, the Court said:

> These cases go far toward establishing the general principle that *the Government as condemnor may not be required to compensate a condemnee for elements of value that the Government has created, or that it might have destroyed under the exercise of governmental authority other than the power of eminent domain.* If, as in *Rands* [389 U. S. 121 (1967)], the Government need not pay for value that it could have acquired by exercise of a servitude arising under the commerce power, it would

seem *a fortiori* that it need not compensate for value that it could remove by revocation of a permit for the use of lands that it owned outright.

* * * * *

We hold that the Fifth Amendment does not require the Government to pay for that element of value based on the use of respondents' fee lands in combination with the Government's permit lands.

I submit that the Chance and Washburn patents added value to plaintiff's patent, as were the Government-owned grazing lands added value to Fuller's land. The grazing charges for those grazing lands were very minimal, virtually free.

With relation to the "entire market value rule" which the majority has suggested and used to avoid the apportionment of infringer's profits under the *Westinghouse* rule, I answer by quoting from *Marconi Wireless Telegraph Co.* v. *United States*, 99 Ct. Cl. 1, 46–47 (1942), modified on other grounds, 320 U. S. 1 (1943), where it is stated:

> The status of a patent in the art with which it is associated is of importance in determining the base which is to be used in an accounting. The reason for this is succinctly set forth in *Garretson* v. *Clark*, 111 U. S. 120, in which it is stated:
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> > When a patent is for an improvement, and not for an entirely new machine or contrivance, the patentee must show in what particulars his improvement has added to the usefulness of the machine or contrivance. He must separate its results distinctly from those of the other parts, so that the benefits derived from it may be distinctly seen and appreciated. The rule on this head is aptly stated by Mr. Justice Blatchford in the court below: "The patentee," he says, "must in every case give evidence tending to separate or apportion the defendant's profits and the patentee's damages between the patented feature and the unpatented features, and such evidence must be reliable and tangible, and not conjectural or speculative; *or he must show*, by equally reliable and satisfactory evidence, *that the profits and damages are to be calculated on the whole machine, for the reason that the entire value of the whole machine, as a marketable article, is properly and legally attributable to the patented feature.*" [Italics ours.]

> From a consideration of subsequent cases, the application of this rule relates more directly to an accounting based upon profits rather than the type of accounting which is based on reasonable royalty and which has been followed in the present case with reference to the Lodge patent. *This becomes apparent if we consider a theoretical instance, in which the profits, due to the patented portion of a machine, have on apportionment been found to be 25 percent of the total profits on the machine, the remaining 75 percent being due to extraneous elements or elements patented by others. In such a case plaintiff would be entitled only to the profits on the features or elements covered by his patent.* If, however, the recovery of compensation in the same instance were measured by a reasonable royalty, such a procedure would take into consideration both the nature of the patented invention and its relation to the entire machine as a whole. Thus, in applying a reasonable royalty rule to the same situation just outlined, the differential between the patented and unpatented features of the machine would be taken into account by scaling down the percentage of royalty accordingly. It would make no difference in the ultimate compensation to plaintiff if the reasonable royalty were fixed at 5 percent of the selling price of the complete machine rather than 20 percent of one quarter of the sales price of the machine. [Emphasis supplied.]

In the present case, in its attempt to establish a royalty rate of a "willing-buyer/willing-seller," the majority uses and depends on an accounting which is based upon profits of Hickok. Under the above-quoted passage from *Marconi*, before the majority can construct a hypothetical profit figure for Hickok, the majority must apportion the hypothetical profits between profits generated solely by plaintiff's oscillograph patents and profits attributable to "extraneous elements or elements patented by others." In determining the "willing-buyer/willing-seller" royalty rate, the majority may use only the portion of Hickok's profits allocable to plaintiff's patent; the majority may not include profits allocable to *"extraneous elements or elements patented by others."* The "entire market value rule" may not be used to establish a rate which is based on

unapportioned profits. Therefore, by using the unapportioned profits of Hickok without first segregating that portion of Hickok's profits allocable to plaintiff's patents from that portion allocable to *"extraneous elements or elements patented by others,"* the majority repudiated the *Marconi* rule. Under the *Marconi* analysis, the majority should have allocated the gross profit figure of $118 between the portion attributable to plaintiff's patents and the other portions attributable to "extraneous elements or elements patented by others." The record shows that patents "by others" in this case include patents by Chance (oscillographs), Washburn (oscillographs), Western Electric (transistors, photo transistors and diodes), RCA (oscillographs) and Hewlett-Packard (oscillographs). In this respect, plaintiff's vice president, Mr. Weber, testified that the Western Electric, Hewlett-Packard and RCA patents were material considerations in plaintiff's cross license agreements. Mr. Glassman testified that an application of the lost profit theory in this case would be inappropriate because

> • • • there was considerable uncertainty about what the Plaintiff's profits would have been even if they had been capable of accepting these contracts, and I have already referred *to the impracticality of trying to determine the exact costs of those parts of the oscilloscope which used the patents* in suit. So all these things put together, it seems to me, indicate that the lost profits theory is quite inappropriate. [Emphasis supplied.] [Tr. 3884.]

Therefore, I submit that in order to be consistent with the *Calhoun* rule and *Saulnier, supra, Badowski, supra,* and *Pitcairn, supra,* where a royalty rate is established by plaintiff's own cross licenses, that royalty rate established is the measure of reasonable and entire compensation. The total recovery computed using such established rate should not be summarily upset or changed by comparing the final figure to plaintiff's total profits or rate of profit from plaintiff's business, as the majority did. Plaintiff's business profits should not be an element in establishing plaintiff's recovery because defendant did not take plaintiff's business. We must not depart from *Mitchell* v. *United States, supra.* Under the *Calhoun* rule, in view of the existence of an established royalty determined by reference to the three cross licenses between plaintiff and RCA, Western Electric and Hewlett-Packard, the Government's suggested graduated rate, 1.5 percent on the first $2 million, 1.2 percent on the next $3 million and 1 percent on the remainder, should have been accepted by the majority.

I submit that use of the Hickok hypothetical profit approach by the majority was in error. Even *Georgia-Pacific* discusses the necessity of considering apportionment of infringer's profits (Hickok) where the patent in issue is only an improvement patent; the majority, however, did not take up this problem of apportioning Hickok's gross profit figure of $118. Defendant's witness testified that if the Hickok profit were apportioned, the resulting rate would be much less than the 7.65 percent rate selected by the majority (Tr. 3908).

I submit that a willing buyer-willing seller approach using a hypothetical infringer's profits as a basis of analysis is not only novel but without precedent in a suit under 28 U.S.C. § 1498 governed by the federal law of eminent domain. I submit that the majority erred in using the infringer's profit approach for the reasons above stated.

Under the Government's graduated rate, plaintiff is entitled to recover $185,445. ((Tr. 3845), Ex. DA-25, -26 - 27A.) As for the method of compensating delayed compensation, I agree with the majority.

FINDINGS OF FACT

The court, having considered the evidence, the findings of former Trial Judge Hal D. Cooper, and the briefs and arguments of counsel, makes findings of fact as follows:

1. The oscilloscopes (hereafter scopes) for which plaintiff seeks compensation are the following models: 1805, 1805A, USM/81, LA261, LA265, LA265A, LA545, AN/USM-105, AN/USM-140 series, and AN/USM-141 series.

2. All of the scopes here in issue are covered by one or more claims of one or more of the patents in suit. The patents in issue cover only portions of the accused scopes. None of the patents cover the preamplifier units, referred to as plug-ins, used with the scopes and scopes can be purchased without plug-ins; however, the scope has no utility without a plug-in and the practice most often followed is to order plug-ins from the same source as the scopes. The plug-ins are financially dependent on the market created by the patented scopes. Patent No. 2,883,619 is directed to an electrical probe. Plaintiff's evidence is insufficient to make any determination with respect to the probes.

3. Plaintiff's 535 and 545 scopes which embody the circuitry disclosed and claimed in the patents here in suit were the culmination of 7 years of research and development and were first offered for sale in 1954. Up to the time of the liability trial in 1965, plaintiff had sold more than 26,000 type-535 and more than 40,000 type-545 scopes producing revenues in excess of $100 million. The inventions of the patents in suit made a substantial contribution to oscilloscope technology, increasing the reliability and precision of measurements made with scopes and making it possible to do jobs which were practically impossible otherwise. Despite attempts by others to produce high-performance oscilloscopes with Government funding, plaintiff's scopes employing the patented circuitry in suit were the most technically advanced scopes available in 1958 and for several years thereafter. Oscilloscopes which did not have the patented circuitry were technically obsolete after introduction of the patented scopes. The wide range of sweep speeds and the plug-in versatility of plaintiff's scope made it possible to replace two or more older scopes or other instruments with one patented scope. No one else was able, in the late 1950's and early 1960's to manufacture a competitive scope of the same high performance and technical sophistication as plaintiff's scopes without using the patented circuitry.

4. (a) Defendant was not interested in procuring a scope which the third-party defendants designed and built. Defendant's procurement procedure made it clear that it would accept only plaintiff's scope or a virtual copy thereof manufactured by one of the third-party defendants. In its early requests and invitations, defendant described the product it was seeking in language such as "Tektronix, Inc. Model 535 as manufactured by Hickok," "Jetronic Model to meet characteristics of Tektronix Model 535," "Tektronix

Model 535 or equal," or "Tektronix Model 545 or equal." Later, when the third-party defendants had their own nomenclature describing their copy of plaintiff's scopes, defendant's requests were phrased in the alternative such as "Tektronix 545A or Hickok 1805A or Lavoie LA265A."

(b) In order to meet defendant's requirements, Jetronics found it necessary to copy the physical layout and circuit design of the Tektronix 535 and used the Tektronix 535 performance specifications in manufacturing the USM/81. To comply with defendant's requirements, Hickok copied the physical layout and circuit design of the Tektronix 535 in manufacturing its USM/81. Likewise, to meet defendant's requirements, Hickok manufactured its 1805 as a copy of the Tektronix 545. On at least one occasion, in competing against plaintiff for a contract involving a Tektronix 545A-type oscilloscope, Hickok actually submitted to defendant a Tektronix-manufactured oscilloscope with a Hickok face plate and represented the scope as a bid sample of the scope that Hickok intended to manufacture. The three Lavoie scopes LA545, LA265, and LA265A are essentially the same instrument. No distinction was made by the court during the liability trial and the LA265 was considered representative of all. A comparison of the LA265 scope with the Tektronix 545A scope shows that the scopes are virtually identical in appearance and internal structure. A comparison of the LA261 scope and the LA261 manual with plaintiff's 516 scope and plaintiff's manual shows that the Lavoie LA261 is a copy of the Tektronix 516 in structure, appearance, specifications, and that in all material respects the two are identical. In addition to copying the mainframes of the scopes, both Hickok and Lavoie copied plaintiff's plug-in components which are inserted into the mainframe of the scope as part of the integral structure of the scope. Lavoie even used the same nomenclature as plaintiff to designate its plug-ins.

(c) Because the copies of plaintiff's instruments so closely resembled genuine Tektronix instruments, many of defendant's employees thought the copies were made by plaintiff. When problems arose with the copies, plaintiff's field engineers were often called to fix the instruments. When they were called upon by defendant's employees and asked for assistance, plaintiff's field engineers usually assisted defendant and provided information, service, and even repaired some of the copies of plaintiff's instruments. Often it was only after having made a special trip to a Government installation that plaintiff's field engineer realized he had been asked for assistance relating to a non-

Tektronix instrument. Some employees of defendant asked plaintiff's field engineers for assistance relating to the copies even after realizing that the instruments were not made by plaintiff when they were unable to get help from the third-party defendants. Plaintiff's field engineers and instructors conducted training classes on plaintiff's instruments, many of which were attended by military personnel who then used the copies of plaintiff's instruments manufactured by Hickok or Lavoie. On some occasions, plaintiff's field engineers, at defendant's request, drove great distances to remote military installations to teach military personnel how to use plaintiff's instruments, only to find that mainly copies were being used.

(d) Plaintiff's commercial scopes could have satisfied defendant's needs for the USM/81, 1805, 1805A, LA545, LA265, LA265A, and LA261 types of scopes. The AN/USM-105 and the AN/USM-140 and 141 series were militarized versions which plaintiff did not make and on which plaintiff did not seek to bid.

5. Although plaintiff has a policy of actively seeking patent protection for its inventions, it does not use its patent portfolio for the purpose of producing revenue by licensing; rather, it employs patents to protect its market position as a leading manufacturer of oscilloscopes. However, the plaintiff granted to the Western Electric Company and RCA a royalty-free license in its patents in return for a license in certain groups of patents of those firms. Plaintiff also licensed the Hewlett-Packard Company, a major competitor, with a royalty-free cross-license in all patents of each firm. The few instances in which plaintiff did enter into licenses, and the unique circumstances surrounding those licenses, lead to the conclusion that plaintiff has no discernible licensing policy upon which this court can predicate a "reasonable royalty." Defendants concede this to be the fact.

6. Extensive testimony by Mr. E. E. Swanson, controller for plaintiff since 1961, as well as by others, has satisfactorily established plaintiff's sales, its accounting procedures and methods, its cost-accounting techniques, its discount policies, its catalog prices, and, where necessary, the reason for the absence of certain records and the basis on which certain subsidiary records may be used to ascertain the needed information. This evidence establishes that:

(a) Plaintiff's policy was to sell its oscilloscopes to all customers, including defendant, at the catalog price less its standard discount. That discount policy provided no

discount on the first nine units purchased, a 2% discount on the tenth unit through the twenty-fourth, a 4% discount for the twenty-fifth unit through the forty-ninth, and a 6% discount on all units beyond the forty-ninth. Plaintiff's catalog prices, which remained the same at all relevant times, were $1,400 for the 535, $1,550 for the 545, and $1,130 for the 516.

(b) Plaintiff's costs to produce scopes consist of material, labor, variable burden, and fixed burden. Fixed burden is the burden that does not vary with the volume of production but varies with or is related to a period of time. Fixed burden includes the capacity expenses and direct-period expenses of nonmanufacturing areas. Capacity expenses are the expenses associated with a general level of production or an ability or capacity to operate or produce at a certain level. Depreciation, insurance, and property taxes are capacity expenses and thus are part of fixed burden. Marketing, administration, and engineering expenses are direct period or fixed expenses and thus part of fixed burden.

(c) Other possible costs that may be incurred are expenses in making a sale, shipping, warehousing, field support, order processing, billing, carrying higher inventory, and accounts receivable.

(d) The difference between the selling price and the total variable cost or out-of-pocket cost is the contribution which a product makes toward fixed burden and profit.

(e) Sales to defendant have generally been about 10% of plaintiff's total sales. Even including indirect sales, defendant's business has never exceeded 25% of plaintiff's total sales. If defendant had procured from plaintiff all of the nonmilitarized scopes, including plug-ins and accessories, that it procured from the third-party defendants, plaintiff's annual sales would have increased an average of approximately 3% during the period 1959-1966. The increase would not have exceeded 6% in any year. During the period 1959 to 1968, plaintiff sold 14,230 model 535 or 535A scopes and 20,485 model 545 and 545A scopes.

7. The evidence, including the testimony of plaintiff's witnesses Scott and Park, established that the increase in production required to fill the contracts for nonmilitarized scopes awarded to others could have been handled by plaintiff, with its existing facilities and personnel, either then currently employed or from a readily available labor pool. This was true throughout the period of infringement. The commercial models which plaintiff sold to its other customers would have met the requirements of defendant.

However, plaintiff has failed to prove by clear and convincing evidence that, if the defendant had confined itself to authorized sellers, plaintiff would have actually made the sales to the Government which were made by the third-party defendants, or that if it had made such sales it would have made and retained the "lost" profits it seeks in the present suit.

8. Defendant's gross cost for procuring the scopes, plug-ins, accessories, and spares under the 42 contracts was approximately $10,409,730. This represented a savings to defendant of more than $4,891,000, as compared to the cost of the scopes and plug-ins had they been procured from plaintiff. These contracts covered procurement of 9,105 scopes. Based on the scopes only, defendant's procurement cost it $9,115,068, as compared to $12,542,617 at plaintiff's prices, a savings of $3,427,549 for defendant. For scopes and plug-ins together, excluding all else, defendant's procurement costs were $9,740,385.

9. Based on the information available at trial, defendant, under 30 separate contracts, procured 8,437 militarized scopes from Hickok and Lavoie. These procurements were spread over the following period:

Year	*Oscilloscopes*
1961	1,079
1962	645
1963	359
1964	1,609
1965	639
1966	2,607
1967	1,499
Total	8,437

This represented a total procurement of $11,557,695, of which $7,829,772 was the cost of the scopes.

10. (a) Defendants concede there is no established royalty for the patents in this accounting. Defendant relies principally on certain commercial radio apparatus licenses granted by Radio Corporation of America (RCA), which licenses included oscilloscopes as one of the types of apparatus licensed. Plaintiff is a licensee of RCA under this type of license. The RCA license had a commercial royalty rate of 1½% and a Government rate of 1%. Plaintiff also had a cross-license with Western Electric, which had a royalty rate of 2% on commercial sales and 1% on sales to the Department of Defense. Also in evidence is a Raytheon license with defendant which provided a sliding royalty ranging from 2% to 1% on subminiature tubes. Based on

these licenses, defendant recommends a royalty program of 1.5% on the first $2 million of procurement, 1.2% on the next $3 million procurement, and 1% on the remainder, with the royalty base restricted to the scope, omitting all plug-ins, probes, accessories, packing, data, etc. Those figures would yield a total royalty of $185,445 for all of the scopes, both military and commercial, procured by defendant.

(b) The RCA, Western Electric, and Raytheon licenses on which defendant relies are not analogous to the situation present here. Each of those companies is, as compared to plaintiff, a corporate giant with a diverse product line and extensive patent portfolios. The licensing program of both RCA and Western Electric was in the context of an antitrust consent decree. The subminiaturized tubes of Raytheon are not in any way related to oscilloscopes. Items such as transistors, tubes, and similar electronic components have a relatively low per-unit cost but are sold and used in large quantity. That is distinguishable from an instrument such as an oscilloscope where the per-unit cost is much higher and the quantities sold are much lower. Defendants have not carried their burden of establishing any meaningful pattern of licenses, or royalty rates, that would be relevant in this case.

11. (a) Plaintiff offered the testimony of Elmer Gorn to assist the court in establishing a reasonable royalty rate to be used in determining the basic compensation due plaintiff for infringement on contracts involving the AN/USM-105, AN/USM-140, and AN/USM-141 scopes. Gorn proposed to establish a reasonable royalty on a "willing buyer-willing seller" model. That model contemplates a suppositious meeting prior to any infringement between the patent owner and the potential manufacturer of the infringing items in order to negotiate a license agreement. The prospective licensee and the prospective licensor in this hypothetical meeting would agree upon a royalty equal to the difference between the expected sale price and the expected cost of the infringing item minus the normal nonproprietary profit of the infringing manufacturer. In postulating what the potential licensor might suggest during the hypothetical meeting as his expected sale price of the infringing item, the actual sale price of the infringing item may be considered if it is reasonable and consistent with the assumptions and expectations of the parties governing the hypothetical negotiation. Where the patentee has manufactured the patented item and has

adequate cost data with respect thereto and where the prospective licensee has not manufactured the patented item, the prospective licensee has not manufactured the patented item, the parties would adopt the patentee's costs as a reasonable estimate of the prospective licensee's costs. Those costs would include all of the factors thought necessary, *i.e.*, materials, labor, variable manufacturing burden, fixed manufacturing burden, marketing expense, administration expense, and research and engineering expenses.

(b) This formula presented by plaintiff, when properly used, furnishes a good starting-point for the determination of a reasonable royalty which would be agreed upon by a "willing buyer" and "willing seller."

12. (a) Cost/price studies were made by plaintiff during the period of 1959–1967. The purpose of these studies was to evaluate the profit performance of each product and to aid in pricing new products. These studies compiled actual manufacturing costs for each product sold by plaintiff; in addition, each product was allocated a certain percentage of the nonmanufacturing costs including research and development, marketing, and administration. The allocation is based on a percentage of the standard manufacturing cost of each product and merely represents a method of spreading these expenses across the entire product line. The "Total Company Cost" is a sum of both the actual costs for each product and the allocated costs assigned to that product. To determine the actual manufacturing costs for that product, the allocated costs should not be included.

(b) Plaintiff's cost for the model –545 scope during 1959 was $1019. That figure is based on the variable manufacturing cost of $486 plus $533 for fixed burden, marketing and administrative costs, etc. (including plaintiff's profit-sharing program).

(c) Hickok's average profit during the period 1960–68 was 2.7%. In 1961, its profit was 4.7% of sales.

(d) Plaintiff has a profit-sharing program in which 35% of the profits each year is distributed to its employees.

13. The result of the formula described in finding 11, when appropriately applied to this case, leaves a residual share of 7.65% of unit price as royalty (or part of the royalty) for the plaintiff as the presumed willing seller. Based on all the considerations applicable to the case it is concluded, however, that 10% would be the reasonable

royalty accepted by the suppositious willing seller and willing buyer.

14. (a) Where it is not practicable to determine with certainty the cost of portions of a device, the general practice in the electronics industry is to use the cost of the entire "black box" or device as a royalty base. If only a minor portion of the device is covered by the patent, a lower royalty rate in recognition of this fact is usually adopted. While, in the present case, less than the entire scope is covered by the patents in suit, the patented circuits cover the major elements that make the scope a success so no diminution in royalty would be appropriate.

(b) It is the practice in the industry to negotiate the base to which the royalty rate is to be applied. In some instances, unpatented items such as plug-ins and accessories are included in the base while, in other instances, they would be excluded. There is no exact formula for determining this, the practice varying from license to license. One reasonable approach is to include in the base everything required for an operative device, which, in this case, would include plug-ins, probes, and accessories. Another reasonable approach would be to exclude from the base all unpatented items which are readily separable and for which separate prices are readily ascertainable; this would exclude plug-ins, probes, and accessories. Items such as packing and instruction manuals are not normally included in the royalty base.

15. Hickok presented some cost estimates it had made in early 1961 for an unsuccessful bid on a contract for production of the 1805 scope. No records were produced by Hickok to show either what its actual costs were or what its actual profits were on the sale of these scopes. Nor did Hickok produce any estimated costs for any contracts actually awarded to it.

16. As a part of its periodic cost/price studies, plaintiff projected, for each product, an anticipated profit margin as a percent of the catalog price. During 1961–67, those margins were:

	Model 535 Percentage	*Model 545 Percentage*
1961	25.7	29.9
1962	21.9	20.7
1963	24.1	28.7
1964	29.6	30.3

1965	20.8	28.3
1966	22.2	26.5
1967	22.0	25.4
Average:	23.7	27.1

The combined average, weighted to reflect the higher sales of the model 545, is 26.5%.

17. At the rate of 10%, applied to a base of $21,298,080 ($9,740,385 for the "commercial" scopes plus plug-in accessories; $11,557,695 for "militarized" scopes plus plug-in accessories), the reasonable and entire compensation to plaintiff for the patents infringed amounts to $2,129,808 plus compensation for delay in payment.

18. Compensation for delay in payment shall be made at the rates prescribed in *Pitcairn, Agent v. United States*, No. 50328, decided Dec. 15, 1976.

CONCLUSION OF LAW

Upon the foregoing findings of fact which are made a part of the judgment herein, the court concludes as a matter of law that plaintiff is entitled to recover the sum of $2,129,808 plus interest as part of just compensation. The exact amount of recovery will be determined under Rule 131(c).